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BULLETIN OF THE INTERNATIONAL UNION AGAINST TUBERCULOSIS

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## TUBERCULOSIS SURVEILLANCE RESEARCH UNIT

### REPORT NO. I

# THE TRANSMISSION OF TUBERCLE BACILLI

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BULLETIN OF THE INTERNATIONAL UNION AGAINST TUBERCULOSIS

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# TUBERCULOSIS SURVEILLANCE RESEARCH UNIT

## REPORT NO. 1

# THE TRANSMISSION OF TUBERCLE BACILLI

## ITS TREND IN A HUMAN POPULATION

International Union against Tuberculosis
20, rue Greuze, 75 PARIS 16e – Tel. 727.58.73 or 553.75.92

The present number of the Bulletin of the Union appears in only one version — the English version. This report of the TSRU is published in *French* in the Bulletin of the WHO, with the exception of the appendix, which consists entirely of tables. The appendix appears in the present number of the Bulletin of the Union in both French and English.

Le présent numéro du Bulletin de l'Union parait en une seule version, la version anglaise. Ce travail du Tuberculosis Surveillance Research Unit est publié in *extenso* en *Français* dans le Bulletin de l'Organisation Mondiale de la Santé, à l'exception des tableaux annexes qui figurent dans les deux langues dans le présent numéro du Bulletin de l'Union.

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Des abonnements peuvent être pris auprès de l'Union Internationale contre la Tuberculose.

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# THE TRANSMISSION OF TUBERCLE BACILLI

## ITS TREND IN A HUMAN POPULATION

Tuberculosis Surveillance Research Unit*

The work was carried out and the report prepared by

K. STÝBLO, J. MEIJER and IAN SUTHERLAND**

* The Tuberculosis Surveillance Research Unit (TSRU) is a special research unit established by the International Union against Tuberculosis (IUAT) in collaboration with the World Health Organization (WHO) and four countries (Canada, Czechoslovakia, The Netherlands and Norway). The Research Director of the Unit is Dr. K. Stýblo.

The research is guided by the TSRU Directing Committee. The members of this Committee are: Dr. Johs. Holm (Executive Director, IUAT); Dr. G. Canetti and Dr. J. R. Bignall (Co-ordinators of the Technical Committees, IUAT); Dr. K. Raška (Director, Division of Communicable Diseases, WHO); Dr. H. Mahler (Chief Medical Officer, Tuberculosis Unit, WHO); Dr. C. W. L. Jeanes (Executive Secretary, Canadian Tuberculosis and Respiratory Disease Association); Dr. S. Grzybowski (University of British Columbia, Vancouver); Dr. J. W. Davies (Department of National Health, Ottawa); Dr. G. D. Barnett (Saskatchewan); Dr. K. Toman (Director, International Training Course in Epidemiology and Control of Tuberculosis, Postgraduate Medical School, Prague); Ing. J. Radkovský (Senior Statistician, Institute of Epidemiology and Microbiology, Prague); Dr. J. Meijer (Director, Royal Netherlands Tuberculosis Association); Dr. R. Drion (Chief Medical Officer of Health, The Netherlands); Dr. M. A. Baas (Tuberculosis Adviser to the C.M.O., The Netherlands); Dr. M. A. Bleiker (Organization for Health Research T.N.O., The Netherlands); Dr. B. V. Bekker, (Epidemiological Department of the C.M.O.'s Office, The Netherlands); Dr. O. U. Galtung (Director, Division of Tuberculosis, The Health Service of Norway); Mr. H. Th. Waaler (Senior Statistician, Central Tuberculosis Registry, Oslo); Dr. Ian Sutherland (Member, Statistical Research Unit, Medical Research Council, London); Dr. K. Stýblo (Research Director of the TSRU, IUAT).

** Appendix Table A was prepared by Ing. M. Šampalík (Statistician, Institute of Epidemiology and Microbiology, Prague). Some of the other calculations were made by Ing. I. Reil (Senior Statistician, Tuberculosis Research Institute, Prague).

# SYNOPSIS

*Extensive information is available from tuberculin surveys in the Netherlands on the prevalence of tuberculous infection at various ages in a number of calendar years. A technique has been developed for converting this information on prevalence into a smooth series of annual risks of tuberculous infection. The series of infection risks for the Netherlands, when applied to the population cohorts born since 1910, reproduced the observed prevalence figures satisfactorily. The series was then used to make a comprehensive study of the incidence and prevalence of tuberculous infection for cohorts born in that country between 1910 and 1960 up to the age of 50 years.*

*The main advantages of expressing prevalence data in terms of a series of annual risks of tuberculous infection in this way are: (1) To obtain meaningful indices of the present and past impact of tuberculosis on a community — mortality no longer representing a valuable measure; (2) To assess comprehensively the likely future prevalence of infection and the incidence of fresh infections, at different ages; and thereby (3) To assist the planning of programmes for tuberculosis control in developing countries or for eradication in developed countries.*

*The possibility of applying the same methods to the results of representative tuberculin surveys in other countries should be explored. The present report includes some tables to make this easier, especially in circumstances where the data are much less extensive than in the Netherlands.*

# INTRODUCTION

The study of the epidemiology of tuberculosis and the need for a rational approach to the problem of tuberculosis control require a sound knowledge of the risk of transmission of tuberculous infection from host to host. This knowledge is required to-day both in countries with a high prevalence and in those with a low prevalence of the disease. Dependable information on the transmission of tuberculous infection, and of the trends in the risk in recent years, would enable a developing country to assess the magnitude of its tuberculosis problem and to plan and execute an effective anti-tuberculosis programme; the same information for a technically advanced country would enable it to assess the relevance of current tuberculosis control measures in what is probably a rapidly changing situation, and to plan for the eventual eradication of the disease.

The risk of transmission of tuberculous infection in a given community during a particular period of time is most reliably expressed numerically in terms of a series of average annual risks of acquiring a tuberculous infection (referred to below as infection risks) in successive calendar years. The infection risk indicates the proportion of the population which will be primarily infected, or reinfected, with tubercle bacilli in the course of one year, and is usually expressed as a percentage or as a rate.

In nearly every country the data on the past transmission of tuberculous infection are far from complete because tuberculin testing has not been performed regularly or systematically in representative samples of the population. Even where there has been extensive testing, the methods of testing have often varied, differing tuberculins have been used, and differing criteria employed for distinguishing between persons infected and persons not infected with tubercle bacilli.

The results of tuberculin testing surveys are usually presented only in the form of *prevalence* figures for past tuberculous infection. Prevalence figures do not indicate when in the past the first infections occurred, and it may be thought that no information on this point can be obtained from prevalence data. This is correct if the only results available are from a single tuberculin

survey at one specific age. If, however, the survey covers a range of ages, and especially if several surveys of the same population have been made at different times (using similar techniques, so that the results may be combined), the results do contain useful information, which can be recovered, on the incidence of tuberculous infection during the period since the birth of the surveyed subjects. As will be shown in detail below, it is possible to derive, from data on the prevalence of past infection, a series of estimates of the *incidence* or risk of tuberculous infection in successive calendar years. These estimates may be regarded as an alternative method of presentation of the results of tuberculin surveys, which supplements the usual method of presentation in terms of the prevalence of past infection.

The best opportunity to study the transmission of tuberculous infection is found in those countries where BCG vaccination has not been performed on a large scale, because of the difficulty of differentiating reliably between post-infection and post-vaccinal allergy. In many countries allowance must also be made for infections with atypical mycobacteria, which may lead to tuberculin sensitivity in individuals who have not had a first infection with tubercle bacilli.

The material from the Netherlands seems to be particularly valuable in this connection, as in this country less than 5 percent of the child population has ever been BCG-vaccinated, and mycobacterial infections other than tuberculosis are not nearly as frequent as in many tropical or subtropical countries. The available data on tuberculin sensitivity consist of the results of a series of annual surveys in male recruits (aged about 19 years) which started in 1954, and a series of annual surveys in schoolchildren of both sexes (aged about 12 to 18 years), which started in 1961, both series covering the whole country; the same tuberculin testing technique was used throughout these surveys. In addition, there are results of four earlier surveys in children aged 1 to 14 years in Amsterdam, viz. in about 1926, 1934, 1939 and 1947, using a different testing technique.

The epidemiological advantages of the approach explored in this report, when applied to the data for the Netherlands, are fully illustrated and discussed. In addition, a special section of the report indicates how the analytical technique developed here may be used on similar data from other countries. Suggestions are given for planning future tuberculin surveys in such a way that they may contribute to a better understanding of the tuberculosis problem in a country, as well as influencing the measures for the control and eventual eradication of the disease.

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# I. METHODS

A derivation of the mathematical formula which expresses the relationship between the prevalence of past tuberculous infection in a population group of a particular age, and the incidence of tuberculous infection during the period since the birth of the group, is given in the Appendix, together with a technical description of the application of this formula to the data for the Netherlands. It is, however, necessary here to indicate in general terms how these measures are related, so that the non-mathematical reader will appreciate how it is possible to 'translate' the information on the prevalence of past infection into a series of annual incidence rates, and will realize what difficulties have to be overcome in the process.

Suppose a group, or 'cohort', of children is considered, all of whom were born at the beginning of year $b$, and they are followed until they are all aged exactly $a$ years. If their risk of acquiring tuberculous infection was known for each of the $a$ years through which they had lived, it would clearly be possible to calculate the proportion who had been infected at least once by the age of $a$. If $p_b, p_{b+1}, p_{b+2}, \dots p_{b+(a-1)}$ represent the risks of infection in the $a$ successive years $b$, $b+1$, $b+2$, ... $b+(a-1)$, and $P_{a,b}$ represents the proportion who have been infected by age $a$, then the algebraic formula for calculating $P_{a,b}$ (see Appendix) is:

$$P_{a,b} = 1-(1-p_b)\cdot(1-p_{b+1})\cdot(1-p_{b+2})\dots(1-p_{b+(a-1)}).$$

If $Q_{a,b}$ is written for $(1-P_{a,b})$, $q_b$ for $(1-p_b)$, and so on, then the formula becomes:

$$Q_{a,b} = q_b \cdot q_{b+1} \cdot q_{b+2} \dots q_{b+(a-1)} \qquad (1)$$

The interpretation of the formula in this simpler form is that the proportion of the children who have *escaped* tuberculous infection by age $a$ $(Q_{a,b})$ is equal to the product of the separate risks of escaping tuberculous infection in the $a$ successive years.

As indicated, if the various values of $q$ were known, the value of $Q_{a,b}$ could be calculated quite simply from the formula. The problem here, however, is the reverse. The value of $Q_{a,b}$ is known from a tuberculin survey,

and the problem is to calculate the various values of $q$. Clearly there are many possible sets of values of $q$ which will satisfy the formula, and the problem is to discover the set of values which is closest to the actual epidemiological situation. This cannot be done unless some other values of $Q$ are available, either for different ages, or for children born in different years, or both. The method used for constructing the series of annual risks of tuberculous infection in the Netherlands will be illustrated in the next section in relation to the actual data.

Before proceeding to this analysis, one technical decision has to be made. In all the surveys of tuberculin sensitivity in the Netherlands from 1959, a single intracutaneous (Mantoux) test was made on each subject with 0.00002 mg of RT 23 (1 TU) in 0.1 ml of a buffer containing Tween 80 (from 1954 to 1958 the dose was 5 TU of RT 22 without Tween 80, which is equivalent to the later dose). The transverse diameter of induration was measured after about 72 hours. This is the current standard WHO tuberculin test (WHO, 1963; IUAT, 1964). To assess the frequency of past infection with tubercle bacilli from the findings of this test it is necessary to decide what critical diameter of induration discriminates best in the Netherlands between subjects infected and subjects not infected with tubercle bacilli. The critical diameter has been taken between 7 mm and 8 mm for two main reasons:

(1) It accords with the findings of the most recent surveys of 'specific' and 'non-specific' tuberculin sensitivity in the Netherlands (Bleiker, personal communication). A lower critical diameter — say between 5 mm and 6 mm — would appear to include too many 'non-specific' reactions, and a higher critical diameter — say between 9 mm and 10 mm — would appear to exclude too many 'specific' reactions.

(2) In Britain, a Mantoux test with 0.1 ml of a 1:3000 dilution of Old Tuberculin (3 TU) in a buffer not containing Tween 80 (which has been found in a small study to give similar results to the standard WHO tuberculin test) has been used extensively in serial testing of the same individuals. Subjects originally without any reaction to 3 TU (or 100 TU), who later showed 8 or 9 mm induration to 3 TU, had a substantially higher subsequent incidence of clinical tuberculosis than those who later showed 5 to 7 mm induration to 3 TU (Sutherland, personal communication).

Throughout the rest of this report, therefore, those with 0-7 mm induration to the standard WHO tuberculin test will be regarded as having escaped tuberculous infection, and those with 8 mm induration or more will be regarded as having been infected at some time in the past with tubercle bacilli.

It is important to realize that the prevalence of tuberculin positivity at a particular age will underestimate the prevalence of past tuberculous infection if a proportion of those infected later 'revert' to tuberculin negativity. More precisely, therefore, the risks of infection which are estimated below are risks of 'infection minus reversion', and these may underestimate the true risks of infection to a small extent.

## II. ESTIMATION OF THE ANNUAL RISK OF TUBERCULOUS INFECTION IN THE NETHERLANDS

### (1) *Use of the information from army recruits tested from 1954 to 1966*

The series of annual tuberculin surveys of male recruits aged about 19 years has been used as the basis for estimating the annual risk of tuberculous infection in the Netherlands during the post-war period. These surveys cover about 50 percent of the male population of this age in the Netherlands each year (Bleiker, Griep and Beunders, 1964) but, because only those accepted for army service are tested, the surveys may underestimate slightly the prevalence of tuberculous infection. The tuberculin testing and reading techniques have been uniform throughout, and because the surveys have been undertaken annually since 1954, they give information on the annual infection risks over a considerable period of time. However, the information from the 1954 and 1955 surveys has not been used, partly because the surveys in these first two years were on rather smaller numbers (and were therefore perhaps less representative) than the later surveys, and partly because the results according to the 8 mm criterion for tuberculous infection were not readily available for these years. The data from 1956 to 1966 are summarised in Table 8.

The surveys for these years therefore provide a series of values of $Q_{a,b}$, all for the same value of $a$ (which has been taken to be $19\frac{1}{2}$ years), and for 11 successive cohorts of male subjects. The surveys are regarded as if they were made in the middle of each year, so that the 11 cohorts may be regarded as having been born on average at the beginning of each of the 11 years from 1937 to 1947. That is, there are values of $Q_{19.5,b}$ for $b = 1937, 1938 \ldots 1947$.

The first step is to derive an average value for the risk of infection during the lifetime of each of these cohorts. This may be done by considering a modification of formula (1). If there was no trend in the incidence of infection during the lifetime of a cohort, all the values of $q$ in this formula would be equal, and the formula would become:

$$Q_{a,b} = q^a \qquad (2)$$

Thus an average value for $q$ (the annual risk of escaping infection) during the lifetime of a cohort may be obtained by extracting the '$a$'th root of $Q_{a,b}$;

TABLE 1

*Estimates of the average annual risk of tuberculous infection during the lifetime of 11 cohorts of male army recruits aged 19½ years, The Netherlands*

| Cohort (born on average on Jan. 1) ($b$) | Year of survey (mid-year) | Percentage of recruits with 8 mm induration or more to 1 TU ($100\ P_{19.5,b}$) | Proportion who had escaped infection by age 19½ ($Q_{19.5,b}$) | Average annual chance of escaping tuberculous infection ($\bar{q}_b$) | Average annual risk of tuberculous infection (percent) during lifetime of cohort ($100\ \bar{p}_b$) |
|---|---|---|---|---|---|
| 1937 | 1956 | 21.5 | 0.785 | 0.98766 | 1.234 |
| 1938 | 1957 | 18.5 | 0.815 | 0.98955 | 1.045 |
| 1939 | 1958 | 17.2 | 0.828 | 0.99038 | 0.962 |
| 1940 | 1959 | 14.7 | 0.853 | 0.99188 | 0.812 |
| 1941 | 1960 | 12.9 | 0.871 | 0.99292 | 0.708 |
| 1942 | 1961 | 11.8 | 0.882 | 0.99355 | 0.645 |
| 1943 | 1962 | 9.9 | 0.901 | 0.99468 | 0.532 |
| 1944 | 1963 | 8.3 | 0.917 | 0.99555 | 0.445 |
| 1945 | 1964 | 7.5 | 0.925 | 0.99600 | 0.400 |
| 1946 | 1965 | 6.9 | 0.931 | 0.99635 | 0.365 |
| 1947 | 1966 | 6.0 | 0.940 | 0.99682 | 0.318 |

this can be done quite easily with the aid of logarithms. This average may be written $\bar{q}_b$.

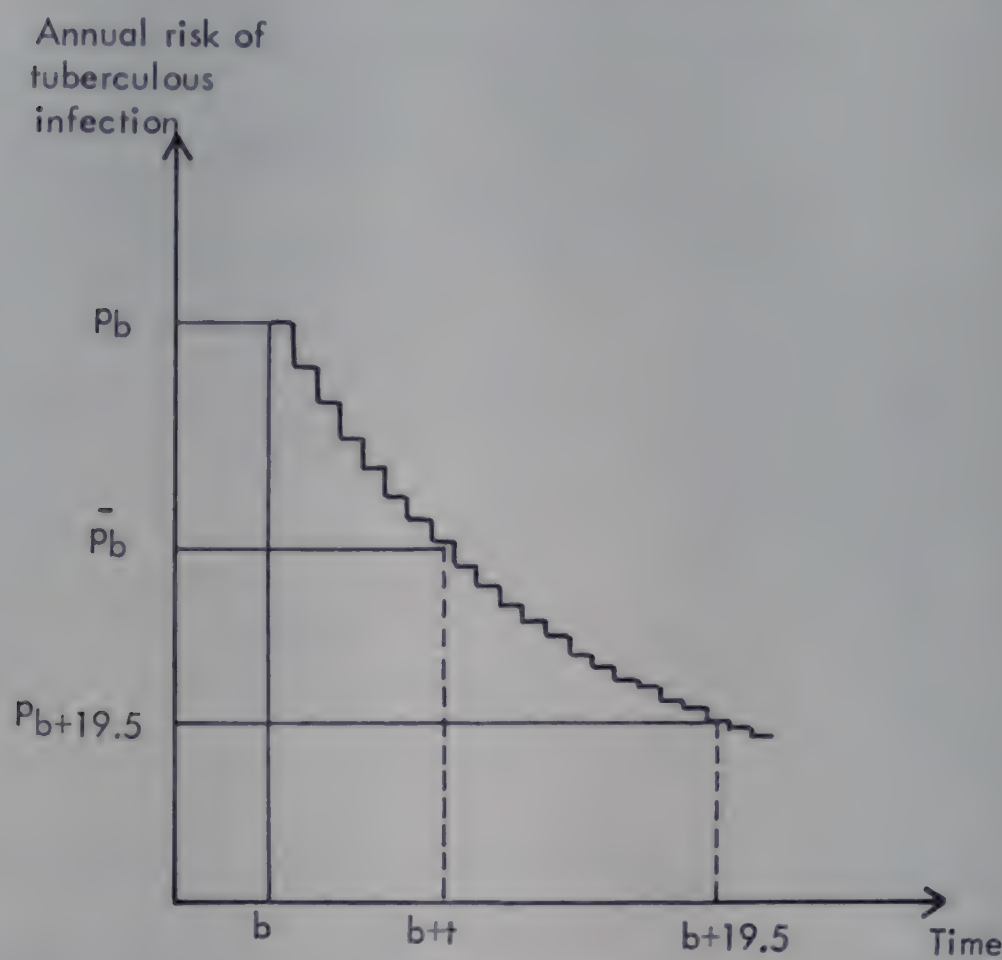
Table 1 shows the observed percentages of recruits with 8 mm induration or more to the standard tuberculin test at each of the surveys (that is, the values of $100\ P_{19.5,\,b}$), together with the associated values of $Q_{19.5,\,b}$, and the values of $\bar{q}_b$ and $100\ \bar{p}_b$ calculated from formula (2). There is a steep downward trend in the values of $\bar{p}_b$ for successive cohorts. Each value of $\bar{p}_b$ will correspond to the annual risk of infection at some time between the time of birth of the cohort ($b$) and the time of the survey ($b+19\frac{1}{2}$). Figure 1 illustrates this point diagrammatically for one cohort. It is not obvious to which intervening time $b+x$ the value $\bar{p}_b$ refers. This time will depend on the way in which the risk of infection has changed during the lifetime of the cohort, and will not necessarily be halfway between $b$ and $b+19\frac{1}{2}$. Moreover, it will not necessarily correspond exactly to a particular calendar year. The next problem is therefore to estimate $b+x$ from the information given by the 11 surveys.

(2) *Assignment of average annual risks of tuberculous infection to specific calendar years*

In formula (1) above, the risk of infection is regarded as being constant

FIG. 1

*A diagram to show that the average annual risk of infection during a period may not correspond to the annual risk at the middle of the period*




throughout a calendar year. Since it is clear that in the Netherlands there must have been a steep downward trend in risk of infection in the years since the Second World War, it would be more realistic to regard the risk of infection as being a continuously changing quantity. Thus, in Figure 1, the series of steps would be replaced by a curve. This involves a modification of formula (1) and the other mathematical formulae derived from it in the Appendix, but the relationship between prevalence and incidence remains essentially the same as in formula (1). With the modified formula, however, it becomes simpler to deal with times and intervals which do not correspond exactly to calendar years, and this modification is therefore important in relation to an accurate estimation of $x$.

As stated above, $\bar{p}_b$ represents an estimate of the annual risk of tuberculous infection at some time $b+x$ during the lifetime of the cohort born at time $b$; this annual risk may be written $p_{b+x}$. Here we have information from 11 cohorts born at annual intervals, and all examined at the same age, and it

has therefore been assumed, as a first approximation, that $x$ will be the same for all of them. Thus the values of $\bar{p}_{1937}, \bar{p}_{1938}, \dots \bar{p}_{1947}$ are a series of 11 estimates of $p_{1937+x}, p_{1938+x}, \dots p_{1947+x}$. In other words, the final column of Table 1 indicates the downward trend in annual infection rate during a period in the Netherlands, which is $x$ years *later* than the period 1937 to 1947.

The next step was to 'fit' a smooth curve to the values of $100\bar{p}_b$ in the final column of Table 1, which closely described their trend, and which could be extended in both directions in time. In the course of the calculations for Table 1, it had been noticed that the 11 values of $\log(-\log q_b)$ lay very nearly on a straight line. A straight line was therefore fitted to these values, using the standard linear regression technique, and regarding all the 11 values as of equal 'weight'. (This line corresponds very closely to an exponential downward trend in the risk of infection; the reasons for choosing this particular line are given in the Appendix). This line was extended in both directions, and, when expressed in terms of $p$, provided the required smooth curve to describe the downward trend of the risk of tuberculous infection in the Netherlands army recruits. The original and the smoothed values of $100\bar{p}_b$ are shown in the second and third columns of Table 2, and it will be seen that the smooth curve agrees closely with the original values.

The smooth curve was then used to determine the value of $x$. For example, the value of 1.227% for the average risk for the cohort born in 1937 was derived from recruits examined in 1956, but corresponds to the risk of infection at an earlier time, when the members of the cohort were younger, namely aged $x$ years. The value of $x$ for this cohort was found by moving the smooth curve describing the downward trend of infection risks to a new position. This new position was such that 19½ years of the infection rates given by the curve, when combined according to the modified version of formula (1), gave a prevalence of past infection at age 19½ years of 21.5 percent, the same as was observed at that age for this cohort (Table 1). The new position for the curve gives a value of 1.227% at an age of 7.719 years (see Appendix), which is thus the required value of $x$ for this cohort.

The series of estimates of $x$ for the 11 cohorts are given in the fourth column of Table 2. They show no systematic variations, and this confirms that $x$ is apparently the same for all the cohorts; the average of the 11 estimates is 7.683 years. Thus, on average, the smoothed values of the average annual infection rates in the third column of Table 2 represent the infection rates at the time when each of the cohorts of children was aged 7.683 years. The final column of the table shows the values of the annual infection rates on the same smooth curve *at the date of birth* of each of the cohorts, given in the first column. A comparison of the last four values in the final column of the table, with the first four in the third column, shows that

TABLE 2

*Derivation of annual risks of tuberculous infection in The Netherlands from 1937 onwards from information from 11 cohorts of male army recruits*

| Cohort (born on average on Jan. 1) (*b*) | Average annual risk of tuberculous infection (percent.) during lifetime of cohort ($100\bar{p}_b$) | Smoothed value of average annual risk ($\equiv 100 p_{b+x}$) | Age in years to which this smoothed value applies (to reproduce observed prevalence at 19½ years) ($x$) | Estimated annual risk of tuberculous infection (percent.) at date of birth of the cohort* ($p_b$) |
|---|---|---|---|---|
| 1937 | 1.234 | 1.227 | 7.719 | 3.28 |
| 1938 | 1.045 | 1.070 | 7.499 | 2.86 |
| 1939 | 0.962 | 0.933 | 7.915 | 2.49 |
| 1940 | 0.812 | 0.814 | 7.672 | 2.17 |
| 1941 | 0.708 | 0.709 | 7.651 | 1.90 |
| 1942 | 0.645 | 0.618 | 7.960 | 1.66 |
| 1943 | 0.532 | 0.539 | 7.612 | 1.45 |
| 1944 | 0.445 | 0.469 | 7.271 | 1.27 |
| 1945 | 0.400 | 0.409 | 7.505 | 1.10 |
| 1946 | 0.365 | 0.356 | 7.878 | 0.97 |
| 1947 | 0.318 | 0.311 | 7.839 | 0.83 |

* Using the average of the column of values of $x$ (namely 7.683) for all the cohorts.

the former curve has been moved between 7 and 8 years, compared with the latter.

This smooth curve of annual infection rates, of which only the portion for the years from 1937 to 1947 is shown in the last column of Table 2, has been derived from information on male recruits which relates to the whole period from 1937 to 1966, and for this reason may be regarded as providing a reliable indication of the change in risk of tuberculous infection in the Netherlands during the whole of this calendar period. The information obtained in the tuberculin surveys of schoolchildren provides a valuable means of testing the adequacy of this curve of annual infection rates, and of seeing whether it needs to be modified to include females as well as males.

### (3) *Use of the information from schoolchildren aged 12 to 18 years tested from 1961 to 1966*

The information from the annual tuberculin surveys of schoolchildren has been used partly to confirm the validity of the series of annual risks of tuber-

culous infection obtained from the information for army recruits, and partly to assess whether the risks are different for boys and girls.

From 1962 onwards the surveys in schoolchildren have covered each year about 50 percent of the population of the Netherlands aged 13 to 16 years (about 70 percent of those aged 14 years), and smaller proportions of those aged 12, and 17 or more (many of the older children having left school). The findings may be regarded as reasonably representative of the whole school population. The tuberculin testing and reading techniques have been uniform throughout, and they are also the same as the techniques used for the army recruits, although the teams making the surveys are distinct. The information from the 1961 survey has not been used here, because the numbers tested were smaller (and the survey was therefore perhaps less representative); however the information at ages 12, 17 and 18 years from the later surveys has been retained, despite the smaller numbers, because they provide a valuable link, in terms of age, with the recruits. The data from 1962 to 1966 are summarised in Table 7.

The results of the analysis of the data for the schoolboys aged $12\frac{1}{2}$ to $18\frac{1}{2}$ years are given in Table 3 with corresponding information for the five most recent cohorts of recruits aged $19\frac{1}{2}$ years. The curve of annual infection rates derived from the 11 cohorts of recruits (part of which was given in the final column of Table 2) was applied to each cohort of schoolboys. The number of years by which this curve had to be shifted, either forwards (+) or backwards (−), to reproduce the observed prevalence of tuberculous infection at each survey (see Appendix), is shown in Table 3.

Most of the shifts are small, and negative, and this corresponds to a slightly lower level of annual risks of infection among the schoolboys than among the recruits. The average shifts are shown for each age-group at the foot of the table, together with the annual risk of infection at the beginning of 1950 for each age-group. There is no definite trend with age, and it therefore seems that there is little variation in the risk of tuberculous infection during adolescence. This point is examined in greater detail in the Appendix. The slightly higher rate for the recruits may perhaps reflect a tendency for this group to have been drawn from a rather different section of the population from the schoolchildren, or there may have been slightly different 'levels' of performance of the test, and of reading the results, in the two sets of surveys.

Table 4 gives corresponding information for the schoolgirls aged $12\frac{1}{2}$ to $18\frac{1}{2}$ years. The shifts in the curve of annual infection rates are all (with one exception) negative, and larger on average than for the schoolboys. It would therefore appear that the risk of tuberculous infection was uniformly lower for girls than for boys throughout this age-range.

Omitting those aged $12\frac{1}{2}$ and those aged $18\frac{1}{2}$, because of the relatively small

TABLE 3

*Extent of the shift in the basic curve of annual risk of tuberculous infection which is required to reproduce observed prevalence of tuberculous infection for schoolboys aged 12½ to 18½ years and recruits aged 19½ years, tested from 1962 to 1966*

| | Age at survey in years | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 12½ | | 13½ | | 14½ | | 15½ | |
| Year of survey (mid-year) | Cohort (born on average on Jan. 1) | Req. shift (yrs) | Cohort | Req. shift | Cohort | Req. shift | Cohort | Req. shift |
| 1962 | 1950 | −0.27 | 1949 | −0.50 | 1948 | −0.11 | 1947 | −0.05 |
| 1963 | 1951 | −0.16 | 1950 | −0.62 | 1949 | −0.39 | 1948 | −0.36 |
| 1964 | 1952 | −0.79 | 1951 | −0.25 | 1950 | −0.90 | 1949 | −0.84 |
| 1965 | 1953 | −1.53 | 1952 | +0.41 | 1951 | +0.81 | 1950 | −0.34 |
| 1966 | 1954 | −1.55 | 1953 | −1.94 | 1952 | −1.59 | 1951 | +1.06 |
| Average shift | | −0.86 | | −0.58 | | −0.44 | | −0.11 |
| Corresponding annual risk at 1950 (percent.) | | 0.49 | | 0.51 | | 0.52 | | 0.54 |

| | Age at survey in years | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 16½ | | 17½ | | 18½ | | 19½ | |
| Year of survey (mid-year) | Cohort (born on average on Jan. 1) | Req. shift (yrs) | Cohort | Req. shift | Cohort | Req. shift | Cohort | Req. shift |
| 1962 | 1946 | −0.33 | 1945 | −0.82 | 1944 | −0.09 | 1943 | −0.07 |
| 1963 | 1947 | −0.07 | 1946 | −0.47 | 1945 | −0.39 | 1944 | −0.41 |
| 1964 | 1948 | −0.61 | 1947 | −0.16 | 1946 | −0.48 | 1945 | −0.18 |
| 1965 | 1949 | −0.28 | 1948 | −0.18 | 1947 | +0.32 | 1946 | +0.20 |
| 1966 | 1950 | −0.39 | 1949 | −0.58 | 1948 | −0.63 | 1947 | +0.15 |
| Average shift | | −0.34 | | −0.44 | | −0.26 | | −0.06 |
| Corresponding annual risk at 1950 (percent.) | | 0.53 | | 0.52 | | 0.53 | | 0.55 |

TABLE 4

*Extent of the shift in the basic curve of annual risk of tuberculous infection which is required to reproduce the observed prevalence of tuberculous infection for schoolgirls aged 12½ to 18½ years tested from 1962 to 1966*

| | Age at survey in years | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 12½ | | 13½ | | 14½ | | 15½ | |
| Year of survey (mid-year) | Cohort (born on average on Jan. 1) | Req. shift (yrs) | Cohort | Req. shift | Cohort | Req. shift | Cohort | Req. shift |
| 1962 | 1950 | −0.58 | 1949 | −0.75 | 1948 | −1.00 | 1947 | −0.70 |
| 1963 | 1951 | −0.48 | 1950 | −1.08 | 1949 | −0.63 | 1948 | −0.75 |
| 1964 | 1952 | −2.05 | 1951 | −0.97 | 1950 | −1.80 | 1949 | −1.43 |
| 1965 | 1953 | −2.87 | 1952 | −0.98 | 1951 | +0.03 | 1950 | −1.16 |
| 1966 | 1954 | −2.51 | 1953 | −3.02 | 1952 | −2.07 | 1951 | −0.30 |
| Average shift | | −1.70 | | −1.36 | | −1.09 | | −0.87 |
| Corresponding annual risk at 1950 (percent.) | | 0.44 | | 0.46 | | 0.48 | | 0.49 |

| | Age at survey in years | | | | | |
|---|---|---|---|---|---|---|
| | 16½ | | 17½ | | 18½ | |
| Year of survey (mid-year) | Cohort (born on average on Jan. 1) | Req. shift (yrs) | Cohort | Req. shift | Cohort | Req. shift |
| 1962 | 1946 | −0.68 | 1945 | −1.04 | 1944 | −0.98 |
| 1963 | 1947 | −0.60 | 1946 | −0.83 | 1945 | −0.84 |
| 1964 | 1948 | −1.23 | 1947 | −1.25 | 1946 | −0.94 |
| 1965 | 1949 | −0.23 | 1948 | −0.46 | 1947 | −0.99 |
| 1966 | 1950 | −0.92 | 1949 | −0.61 | 1948 | −0.87 |
| Average shift | | −0.73 | | −0.84 | | −0.92 |
| Corresponding annual risk at 1950 (percent.) | | 0.50 | | 0.49 | | 0.49 |

numbers tested at these ages, the average shift of the curve of annual infection rates was −0.343 years for boys aged 13½ to 17½ years, and −0.995 years for girls aged 13½ to 17½. The curve of annual infection rates derived from the 11

TABLE 5

*Annual risks of tuberculous infection in The Netherlands from 1910 to 1969, derived from the findings of tuberculin surveys, with possible alternative risks for the period 1933 to 1947*

| Year | Annual risk of tuberculous infection (%) | Possible alternative risk* (%) | Year | Annual risk of tuberculous infection (%) | Possible alternative risk* (%) |
|---|---|---|---|---|---|
| 1910 | 11.31 | | 1940 | 2.08 | 1.72 |
| 11 | 10.74 | | 41 | 1.82 | 1.70 |
| 12 | 10.20 | | 42 | 1.58 | 1.72 |
| 13 | 9.68 | | 43 | 1.38 | 1.78 |
| 14 | 9.18 | | 44 | 1.20 | 1.90 |
| 1915 | 8.72 | | 1945 | 1.05 | 2.10 |
| 16 | 8.27 | | 46 | 0.92 | 1.45 |
| 17 | 7.85 | | 47 | 0.80 | 1.00 |
| 18 | 7.44 | | 48 | 0.70 | |
| 19 | 7.06 | | 49 | 0.61 | |
| 1920 | 6.69 | | 1950 | 0.53 | |
| 21 | 6.35 | | 51 | 0.46 | |
| 22 | 6.02 | | 52 | 0.40 | |
| 23 | 5.71 | | 53 | 0.35 | |
| 24 | 5.41 | | 54 | 0.30 | |
| 1925 | 5.13 | | 1955 | 0.265 | |
| 26 | 4.86 | | 56 | 0.231 | |
| 27 | 4.61 | | 57 | 0.202 | |
| 28 | 4.37 | | 58 | 0.176 | |
| 29 | 4.14 | | 59 | 0.153 | |
| 1930 | 3.92 | | 1960 | 0.133 | |
| 31 | 3.72 | | 61 | 0.116 | |
| 32 | 3.52 | | 62 | 0.101 | |
| 33 | 3.34 | 3.09 | 63 | 0.088 | |
| 34 | 3.16 | 2.72 | 64 | 0.077 | |
| 1935 | 2.99 | 2.42 | 1965 | 0.067 | |
| 36 | 2.84 | 2.18 | 66 | 0.058 | |
| 37 | 2.69 | 2.00 | 67 | 0.051 | |
| 38 | 2.55 | 1.87 | 68 | 0.044 | |
| 39 | 2.41 | 1.78 | 69 | 0.038 | |

* A smoothed series derived from the mortality rates from tuberculous meningitis in children aged 0-4 years (in Table 14); the consequences of this alternative series are examined in Section III.

cohorts of recruits was therefore shifted by half the difference between the shifts for the boys and the girls ($-0.326$ years) to give a curve of annual infection rates which would be appropriate for a group with equal numbers of the two sexes. This new curve has been adopted as a standard curve of estimated annual tuberculous infection rates for the Netherlands, covering the period from 1940 onwards. The reason why it has not been extended further back in time will become apparent below. The percentages infected during each year, according to this standard curve, are shown on the right hand side of Table 5.

(4) *Use of the information from children up to 13 years of age tested in four surveys between 1926 and 1947*

Four surveys of tuberculin sensitivity, in children stated not to be in contact with tuberculosis at home, were made by the Amsterdam Chest Clinic in 1925-27, 1933-35, 1938-40 and 1946-48 (Heynsius van den Berg, 1962). Each survey included children throughout the age-range 0-14 years; the method of testing was the von Pirquet test (without adrenalin), and the result of the test was recorded simply as 'positive' or 'negative'. The percentages positive at different ages in these four surveys are shown in Table 6. The figures were read from the published graph, the original data from these surveys no longer being available. It is not possible to discover how representative these findings are, but they can provide a good indication of the trend in the risk of infection in the Netherlands during the period up to the second World War.

There are two difficulties in using this information to extend the curve of annual tuberculous infection rates for the Netherlands backwards in time. One is the lack of exact knowledge how closely a positive result to a von Pirquet test corresponds to an induration of 8 mm or more to the standard tuberculin test in the Netherlands in the more recent surveys. It appears from the studies summarised by Hart (1932) and also from that undertaken by Madsen and Holm (1935) that these two tests are probably nearly equivalent, and it will be assumed below that this is so, and consequently that a positive result to the von Pirquet test is indicative of a past tuberculous infection.

The second difficulty in using the information is the very high prevalence of positivity to the von Pirquet test, in each survey, among those aged less than 2 years, suggesting that the risk of tuberculous infection was much greater under the age of 2 years than among older children. There are two possible explanations for this. One is that the von Pirquet test may at each age have given a proportion of positive results in children who had *not* had a past tuberculous infection; if this was so, the largest effect would be observed among the youngest groups, because the proportions genuinely infected with tubercle bacilli in these groups would be small. Moreover, the effect would

be to inflate the percentage found to be positive at each age above the true value for the percentage infected. This effect would explain an inconsistency between the findings of the 1946-48 survey and the later findings among the recruits. For example, those aged 10½ in 1946-48 (24.4 percent positive to the von Pirquet test — Table 6) represent the same cohort as those aged 19½ in 1956 (only 21.5 percent positive to the Mantoux test at the 8 mm criterion — Table 8).

The other explanation is that the risk of tuberculous infection under the age of 2 years was genuinely higher than among older children, as a result of infection with bovine tubercle bacilli from unpasteurised milk. Bovine tuberculosis was common in the Netherlands before the second World War and obligatory pasteurisation of milk was introduced only in 1940. To overcome this difficulty, only the information at ages 2½ years and more has been used when estimating the annual risks of infection from the four surveys.

The method used was very similar to that used above for the later period. The aim was first to obtain a smooth curve of annual infection rates and then to discover an appropriate position for this on the time scale, by moving it to the position in which it best reproduced the observed prevalence figures.

The smooth curve of annual infection rates was obtained as follows. Each of the four surveys provides a series of values of $Q_{a,b}$. For example, the survey in 1925-27 may be regarded as having been made on average in the middle of 1926 (and will henceforth be referred to as the 1926 survey). Those aged 2½ (i.e. in their third year of life) at the survey will on average have been born at the beginning of 1924, those aged 3½ at the beginning of 1923, and so on. These tests made in 1926 therefore provide values of $Q_{2.5,\,1924}$, $Q_{3.5.1923}$, $Q_{4.5,\,1922}$, ... $Q_{13.5,\,1913}$.

Using formula (1) and making an appropriate adjustment for the half year of age, we may write:

$$Q_{3.5,\,1923} = q_{1923} \cdot q_{1924} \cdot q_{1925} \cdot \sqrt{q_{1926}}$$

and

$$Q_{2.5,\,1924} = q_{1924} \cdot q_{1925} \cdot \sqrt{q_{1926}}$$

Therefore $Q_{3.5,\,1923}$ divided by $Q_{2.5,\,1924}$ gives an estimate of $q_{1923}$. Similarly $Q_{4.5,\,1922}$ divided by $Q_{3.5,\,1923}$ gives an estimate of $q_{1922}$, and so on. From these ratios of successive prevalence figures from age 2½ to age 13½, each survey therefore provides estimates of the values of $q_b$ for a series of 11 consecutive years, and the four surveys together provide 44 estimates of $q_b$ for four different, but overlapping, 11-year periods.

The 44 values of log ($-$log $q_b$) appeared to lie approximately on a straight line (it will be recalled that this also applied to the corresponding values

from the surveys of recruits) and so a straight line was fitted to these values, using the standard linear regression technique, and regarding all 44 values as of equal 'weight'. This line was extended in both directions, and, when expressed in terms of $p$, provided the required smooth curve to describe the downward trend of the risk of tuberculous infection in Amsterdam schoolchildren in the years before and during the second World War.

The best position for this smooth curve on the time-scale was determined from a comprehensive analysis, similar to that undertaken for the recruits. The amount by which the curve had to be shifted along the time-scale, to reproduce each of the observed prevalence figures of tuberculous infection from age $3\frac{1}{2}$ to age $13\frac{1}{2}$, in each of the four surveys, was determined. These amounts were averaged, and the curve was moved by the average amount. The four surveys cover children born or observed between the years 1913 and 1947, and this new curve has been adopted as a standard curve of annual tuberculous infection rates for the Netherlands, covering the period from 1910 onwards. The percentage infection risks during each year, according to this standard curve, are shown on the left hand side of Table 5. The downward slope of this standard curve is not as steep as that derived from the later surveys of schoolchildren and recruits. The reasons for this will be discussed later in this report. However, because of the difference in slope, the two curves cross between 1939 and 1940. This means that there are two sets of estimated infection rates for the period 1937 to 1939 (the estimates from the later surveys being greater than those from the earlier surveys) and two sets for the period 1940 to 1947 (the estimates from the earlier surveys being the greater). The estimates from the earlier surveys have been preferred for 1937 to 1939, and those from the later surveys for 1940 to 1947.

## III. VALIDITY OF THE ESTIMATES OF ANNUAL RISK OF TUBERCULOUS INFECTION

The validity of the set of estimates of the annual risk of tuberculous infection in the Netherlands between 1910 and 1969, given in Table 5, may be checked by investigating whether they reproduce satisfactorily the prevalence figures at different ages in each of the surveys described above. The observed prevalences of tuberculous infection at different ages in the different surveys are shown in Tables 6, 7, and 8, together with the prevalences calculated from the series of annual infection rates (Columns (1) in Table 8). It will be seen that the agreement is in general very close, particularly for the cohorts observed after the second World War. It is therefore evident that the series

TABLE 6

*Observed percentage prevalence of tuberculous infection at ages 3½ to 13½ years in four surveys, and the prevalence calculated from the standard series of annual risks of tuberculous infection in Table 5*

| Age at survey in years | Year of survey 1925-27 Obs. | Calc. | 1933-35 Obs. | Calc. | 1938-40 Obs. | Calc. | 1946-48 Obs. | Calc. |
|---|---|---|---|---|---|---|---|---|
| 3½ | 33.3 | 33.6 | 25.4 | 25.5 | 18.6 | 17.8 | 13.5 | 13.0 |
| 4½ | 36.9 | 37.6 | 26.4 | 28.4 | 20.7 | 20.3 | 15.1 | 14.2 |
| 5½ | 39.4 | 41.6 | 28.6 | 31.4 | 23.5 | 22.8 | 16.7 | 15.5 |
| 6½ | 42.5 | 45.5 | 32.2 | 34.4 | 25.7 | 25.4 | 16.9 | 17.1 |
| 7½ | 45.3 | 49.3 | 35.7 | 37.4 | 27.9 | 28.0 | 19.6 | 18.8 |
| 8½ | 47.8 | 53.1 | 39.0 | 40.4 | 30.3 | 30.7 | 21.1 | 20.7 |
| 9½ | 50.8 | 56.8 | 42.1 | 43.5 | 32.8 | 33.4 | 22.6 | 22.7 |
| 10½ | 53.9 | 60.4 | 44.7 | 46.5 | 35.4 | 36.1 | 24.4 | 24.8 |
| 11½ | 57.6 | 63.8 | 47.6 | 49.6 | 37.5 | 38.9 | 25.3 | 26.9 |
| 12½ | 60.8 | 67.1 | 49.6 | 52.6 | 40.0 | 41.7 | 27.1 | 29.1 |
| 13½ | 64.4 | 70.3 | 52.2 | 55.6 | 42.8 | 44.6 | 28.5 | 31.4 |

Source of observed prevalence: Heynsius van den Berg, M.R. (1962) Leerboek der tuberculosebestrijding. The Hague, K.N.C.V., p. 149. There is no longer any record of the numbers tested in these surveys.

TABLE 7

*Observed percentage prevalence of tuberculous infection at ages 12½ to 18½ years from 1962 to 1966 (average for both sexes) and the prevalence calculated from the standard series of annual risks of tuberculous infection in Table 5*

| | Year of survey (mid-year) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Age at survey in years | 1962 | | | 1963 | | | 1964 | | | 1965 | | | 1966 | | |
| | Total tested | Percent. prevalence Obs. | Calc. | Total tested | Percent. prevalence Obs. | Calc. | Total tested | Percent. prevalence Obs. | Calc. | Total tested | Percent. prevalence Obs. | Calc. | Total tested | Percent. prevalence Obs. | Calc. |
| 12½ | 53,716 | 3.28 | 3.32 | 59,111 | 2.90 | 2.90 | 60,462 | 2.19 | 2.53 | 73,385 | 1.72 | 2.21 | 40,716 | 1.53 | 1.93 |
| 13½ | 93,628 | 3.76 | 3.91 | 118,058 | 3.18 | 3.41 | 115,787 | 2.87 | 2.98 | 135,266 | 2.62 | 2.60 | 114,930 | 1.70 | 2.27 |
| 14½ | 95,701 | 4.44 | 4.58 | 125,736 | 3.90 | 4.00 | 125,130 | 3.04 | 3.49 | 138,465 | 3.38 | 3.05 | 148,178 | 2.17 | 2.66 |
| 15½ | 71,463 | 5.31 | 5.34 | 102,641 | 4.53 | 4.67 | 101,733 | 3.66 | 4.08 | 113,714 | 3.36 | 3.56 | 127,490 | 3.44 | 3.11 |
| 16½ | 40,652 | 6.06 | 6.21 | 74,780 | 5.42 | 5.43 | 75,114 | 4.38 | 4.75 | 82,736 | 4.18 | 4.15 | 97,166 | 3.46 | 3.62 |
| 17½ | 21,700 | 6.64 | 7.19 | 39,205 | 6.03 | 6.29 | 49,355 | 5.24 | 5.51 | 55,507 | 4.82 | 4.81 | 66,397 | 4.06 | 4.21 |
| 18½ | 12,754 | 8.10 | 8.31 | 19,068 | 7.01 | 7.28 | 25,037 | 6.06 | 6.37 | 34,604 | 5.59 | 5.57 | 40,250 | 4.60 | 4.87 |

Source of observed prevalence data: Staatstoezicht op de Volksgezondheid, Tuberculine-schoolonderzoek, 1962-'66.

TABLE 8

*Observed percentage prevalence of tuberculous infection at ages 19½ years from 1956 to 1966 (males only), and the prevalences (1) calculated from the standard series of annual risks of tuberculous infection for males given (in part) in Table 2; and (2) calculated from the series of possible alternative annual risks given in Table 5*

| Year of survey (mid-year) | Age 19½ years: Total tested | Observed prevalence (%) | Calculated prevalence (%) (1) | (2) | Year of survey (mid-year) | Age 19½ years: Total tested | Observed prevalence (%) | Calculated prevalence (%) (1) | (2) |
|---|---|---|---|---|---|---|---|---|---|
| 1956 | 40,217 | 21.5 | 20.7 | 20.9 | 1962 | 45,124 | 9.9 | 10.0 | 12.5 |
| 1957 | 38,163 | 18.5 | 18.7 | 19.5 | 1963 | 44,600 | 8.3 | 8.8 | 11.1 |
| 1958 | 37,365 | 17.2 | 16.7 | 18.2 | 1964 | 38,395 | 7.5 | 7.7 | 9.6 |
| 1959 | 41,101 | 14.7 | 14.7 | 16.6 | 1965 | 38,999 | 6.9 | 6.7 | 7.9 |
| 1960 | 42,870 | 12.9 | 13.0 | 15.3 | 1966 | 42,458 | 6.0 | 5.9 | 6.3 |
| 1961 | 44,918 | 11.8 | 11.4 | 13.9 | | | | | |

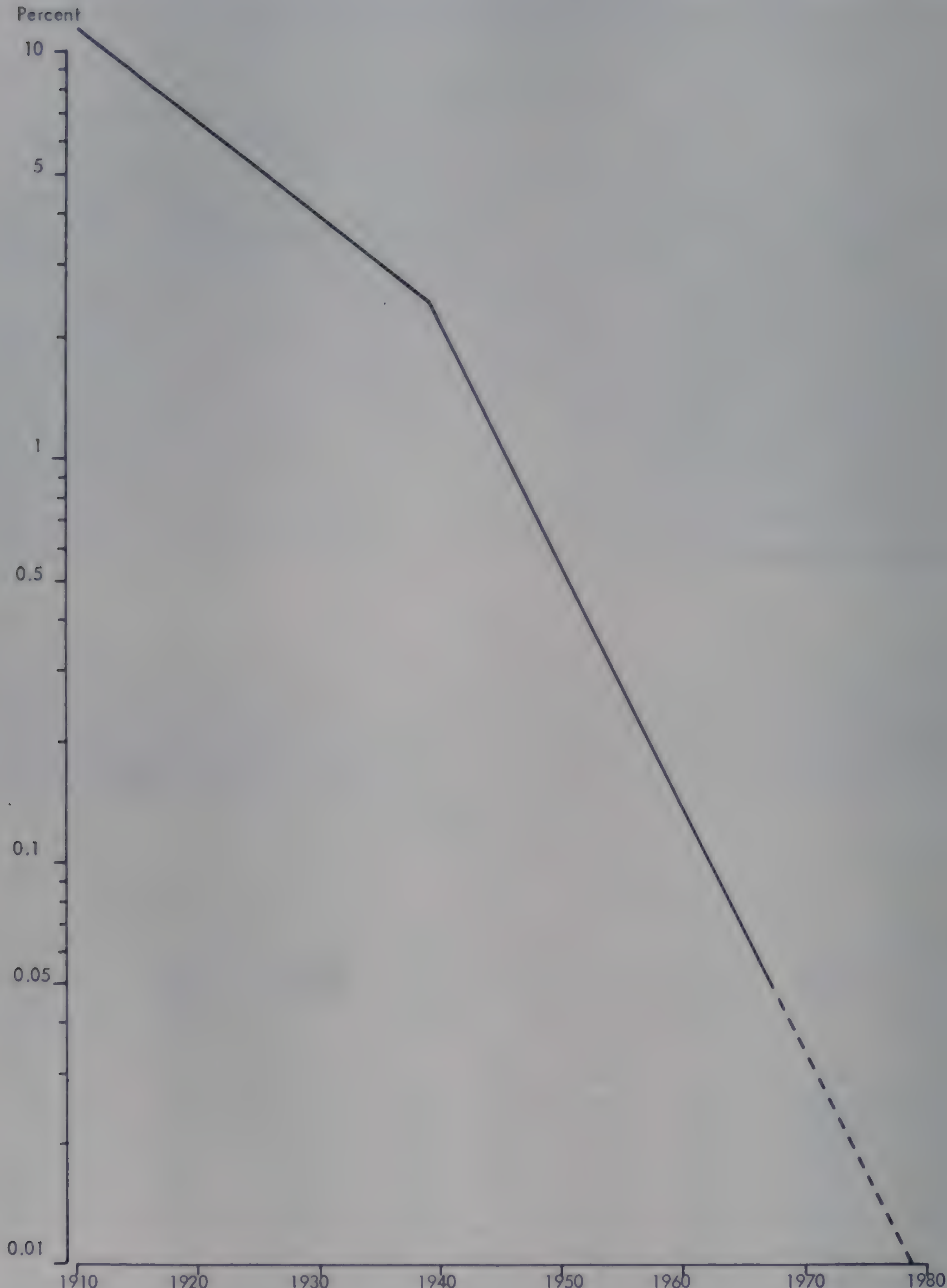
Source of observed prevalence data: Staatstoezicht op de Volksgezondheid, Tuberculine-schoolonderzoek, 1962-66.

Calculated prevalence: (1) From the standard series of annual risks of tuberculous infection for males.

(2) From the series of possible alternative risks of tuberculous infection in Table 5.

FIG. 2

*Annual risk of tuberculous infection (%), The Netherlands 1910-1980*



of rates in Table 5 provides an extremely good indication of the way in which infection rates have changed in the Netherlands during a period of more than fifty years. Indeed, it is surprising that such a simple model, represented by one curve for the period from 1910 to 1939 (for all ages up to $13\frac{1}{2}$ years), and by a second curve for the period from 1940 onwards (for all ages up to $19\frac{1}{2}$ years) should have reproduced so satisfactorily the findings for such a large number of individual cohorts of children examined at different ages.

A feature of this series of rates is that it suggests that there was no interruption in the steady decrease in infection risks in the Netherlands during the second World War. As a further check on the validity of these estimates, therefore, the effect of simulating an interruption in the decrease of infection risks was studied.

Figure 7 shows that the mortality rate from tuberculous meningitis in children aged 0-4 years in the Netherlands, which is likely to be closely related to the risk of tuberculous infection, showed a trend different from that of the series of infection risks between about 1933 and 1947 (after which year the mortality rates are uninformative because of the introduction of chemotherapy). A smooth alternative series of infection risks for these 15 years was therefore derived, which followed the mortality figures for tuberculous meningitis. This alternative series, which is shown in Table 5, was used instead of the original series of infection risks to simulate the effects of an interruption in the steady decrease of infection risk.

The effect of this simulation on the calculated prevalence of tuberculous infection at age $19\frac{1}{2}$ years for the cohorts of recruits (born from 1937 to 1947) is shown in the columns headed (2) in Table 8. Although the prevalences calculated from the alternative series of risks are only slightly higher than the observed prevalences for the first and last cohorts, the values for the intervening cohorts are all substantially higher. For example, for the cohort observed in 1962 the observed prevalence was 9.9 percent, compared with a calculated prevalence of 12.5 percent derived from the modified series of infection risks. However, the calculated prevalence derived from the standard series of infection risks was 10.0 percent, which is much closer to the observed prevalence.

It is evident that the modified series of risks does not adequately reproduce the observed figures. This confirms the essential validity of the set of estimates of annual risks given in Table 5, and indicates that there was no interruption during the war years in the steady decrease in the risk of tuberculous infection.

## IV. ESTIMATES OF THE ANNUAL RISK OF INFECTION UP TO THE AGE OF TWENTY YEARS FOR PREDICTION PURPOSES

One of the main aims in deriving the above series of infection risks was, if possible, to predict the likely status of the population in the Netherlands, in relation to new and past tuberculous infection, during the next twenty or thirty years. Because the decrease in the risk of tuberculous infection in the Netherlands since 1940 has been so remarkably regular, a confident estimate of the future trend in the risk of infection can be made by extending the curve in Table 5 onwards from 1969. It has been assumed for prediction purposes that the present trend will continue until 1980, by which time the annual infection risk would be 0.0085% (Figure 2). To guard against the possibility that any further decrease might represent too extreme an assumption, it will be assumed that thereafter the infection risk will remain constant at this value.

With the aid of this extrapolated series of rates it is possible to make comprehensive estimates, both of the prevalence of past infection and the incidence of primary infection in the Netherlands, for each of the cohorts born in the years from 1910 to 1960, up to the age of 50 years. However, the estimated risks of infection were derived from surveys of children and adolescents, and it is not known whether the risks are the same as these above the age of twenty. It is also possible that there may be some increase in the risk of infection during adolescence (see Appendix). It is therefore advisable to examine the consequences of various assumptions about the risk of infection in relation to age, above an age of about thirteen years. As explained in the next section three separate sets of assumptions have been made, and their consequences studied, to give an indication of the limits within which the future tuberculosis situation in the Netherlands is likely to vary.

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## V. ASSUMPTIONS MADE ABOUT THE RISK OF INFECTION BETWEEN AGES 14 AND 50 YEARS FOR PREDICTION PURPOSES

The results given above suggest that the risk of tuberculous infection in a calendar year may be regarded as being constant at least up to an age of about 13 years. It is widely believed that the risk of tuberculous infection may be greater among adolescents and young adults than among children or older people. There is a little evidence in the present study that there may be some increase of the infection risk during adolescence, but it is not strong, and it relates only to the surveys made during the past few years, when the risk of infection was very low (see Appendix). However, in framing assumptions about the risk of infection, it is necessary to take the possibility of increased risks among adolescents and young adults into account, because they will influence the prevalence and incidence figures from age 14 up to the age of 50 years.

Prevalence and incidence data up to the age of 50 years have therefore been simulated on three different assumptions.

Assumption (A): No increase of the risk of infection with age after 13 years of age.

Assumption (B): An increase of the risk of infection with age after 13 years of age and a subsequent decrease, as follows:

| *Age (years)* | *Ratio of the risk to the risk at 0-13 years* |
|---|---|
| 14 | 1.1 |
| 15 | 1.2 |
| 16 | 1.3 |
| 17 | 1.4 |
| 18-20 | 1.5 |
| 21 | 1.4 |
| 22 | 1.3 |
| 23 | 1.2 |
| 24 | 1.1 |
| 25-50 | 1.0 |

This assumption corresponds to an increase in infection risk during adolescence, diminishing again by the age of 25.

Assumption (C): An increase of the risk of infection with age after 13 years of age, and a subsequent decrease, as follows:

| *Age (years)* | *Ratio of the risk to the risk at 0-13 years* |
|---|---|
| 14 | 1.1 |
| 15 | 1.2 |
| 16 | 1.3 |
| 17 | 1.4 |
| 18-25 | 1.5 |
| 26 | 1.4 |
| 27 | 1.3 |
| 28 | 1.2 |
| 29 | 1.1 |
| 30-50 | 1.0 |

This assumption corresponds to an increase in infection risk during adolescence, the higher level persisting until the age of 25, and diminishing again by the age of 30.

Appendix Table A shows prevalence and incidence figures per 100,000 population at each age from 0 to 50 years for cohorts from each year from 1910 to 1960, calculated on a computer. The upper two lines for each cohort give the prevalence of tuberculous infection (first line: 0-24 years of age; second line: 25-50 years). The lower two lines give the annual incidence of new infections (third line: 0-24 years; fourth line: 25-50 years).

To facilitate the understanding of Appendix Table A, and to compare the effects of the three assumptions, average prevalence and annual incidence figures were also calculated on the computer for groups of five cohorts, in five-year age-groups. The results of this analysis are given in Tables 9 (prevalence) and 10 (incidence). In each table the figures below the heavy diagonal line correspond to future predictions.

Table 9 shows that *the prevalence figures* at ages 16-20 years for assumptions (B) and (C) are slightly higher than those for assumption (A), but not by more than 1.3 percent. The differences at older ages are more pronounced, but even there they do not exceed 4.0 percent. It is important to note that for the cohorts born in 1940 or later, the prevalence figures up to the age of 50 do not differ by more than 0.5 percent at any age, according to the three assumptions.

Table 10 shows *the annual incidence figures* of primary tuberculous infec-

TABLE 9

*Estimated percentage prevalence of tuberculous infection in cohorts born in 1910-14 to 1955-59 in five-year age-groups according to three assumptions on the dependence of the risk of infection on age, The Netherlands*

| Cohort born in | | Age-group (years) 11-15 (1) | (2) | 16-20 (1) | (2) | 21-25 (1) | (2) | 26-30 (1) | (2) | 31-35 (1) | (2) | 36-40 (1) | (2) | 41-45 (1) | (2) | 46-50 (1) | (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (A) | 64.0 | | 71.6 | | 76.3 | | 79.2 | | 80.9 | | 81.7 | | 82.0 | | 82.2 | |
| 1910-14 | (B) | 64.0 | — | 72.9 | 1.3 | 79.0 | 2.7 | 81.9 | 2.7 | 83.3 | 2.4 | 84.0 | 2.3 | 84.3 | 2.3 | 84.5 | 2.3 |
| | (C) | 64.0 | — | 72.9 | 1.3 | 79.3 | 3.0 | 82.9 | 3.7 | 84.4 | 3.5 | 85.0 | 3.3 | 85.3 | 3.3 | 85.5 | 3.3 |
| | (A) | 54.0 | | 61.6 | | 66.4 | | 69.1 | | 70.4 | | 71.0 | | 71.3 | | 71.4 | |
| 1915-19 | (B) | 54.0 | — | 62.9 | 1.3 | 69.4 | 3.0 | 72.1 | 3.0 | 73.2 | 2.8 | 73.8 | 2.8 | 74.0 | 2.7 | 74.2 | 2.8 |
| | (C) | 54.0 | — | 62.9 | 1.3 | 69.7 | 3.3 | 73.1 | 4.0 | 74.3 | 3.9 | 74.8 | 3.8 | 75.1 | 3.8 | 75.2 | 3.8 |
| | (A) | 44.6 | | 51.6 | | 55.4 | | 57.3 | | 58.2 | | 58.6 | | 58.8 | | 58.9 | |
| 1920-24 | (B) | 44.6 | — | 52.8 | 1.2 | 58.1 | 2.7 | 60.0 | 2.7 | 60.8 | 2.6 | 61.2 | 2.6 | 61.4 | 2.6 | 61.5 | 2.6 |
| | (C) | 44.6 | — | 52.8 | 1.2 | 58.3 | 2.9 | 60.7 | 3.4 | 61.6 | 3.4 | 62.0 | 3.4 | 62.2 | 3.4 | 62.3 | 3.4 |
| | (A) | 36.0 | | 41.1 | | 43.6 | | 44.7 | | 45.3 | | 45.6 | | 45.8 | | 45.8 | |
| 1925-29 | (B) | 36.1 | 0.1 | 42.0 | 0.9 | 45.4 | 1.8 | 46.6 | 1.9 | 47.2 | 1.9 | 47.5 | 1.9 | 47.6 | 1.8 | 47.7 | 1.9 |
| | (C) | 36.1 | 0.1 | 42.0 | 0.9 | 45.5 | 1.9 | 47.1 | 2.4 | 47.7 | 2.4 | 48.0 | 2.4 | 48.1 | 2.3 | 48.2 | 2.4 |
| | (A) | 27.2 | | 30.3 | | 31.7 | | 32.4 | | 32.8 | | 33.0 | | 33.1 | | 33.1 | |
| 1930-34 | (B) | 27.3 | 0.1 | 30.8 | 0.5 | 32.8 | 1.1 | 33.6 | 1.2 | 33.9 | 1.1 | 34.1 | 1.1 | 34.2 | 1.1 | 34.3 | 1.2 |
| | (C) | 27.3 | 0.1 | 30.8 | 0.5 | 32.9 | 1.2 | 33.9 | 1.5 | 34.3 | 1.5 | 34.5 | 1.5 | 34.6 | 1.5 | 34.6 | 1.5 |
| | (A) | 18.1 | | 19.8 | | 20.6 | | 21.0 | | 21.3 | | 21.4 | | 21.4 | | 21.5 | |
| 1935-39 | (B) | 18.1 | — | 20.1 | 0.3 | 21.3 | 0.7 | 21.7 | 0.7 | 21.9 | 0.6 | 22.0 | 0.6 | 22.1 | 0.7 | 22.1 | 0.6 |
| | (C) | 18.1 | — | 20.1 | 0.3 | 21.3 | 0.7 | 21.9 | 0.9 | 22.1 | 0.8 | 22.3 | 0.9 | 22.3 | 0.9 | 22.3 | 0.8 |
| | (A) | 10.0 | | 10.9 | | 11.4 | | 11.6 | | 11.7 | | 11.8 | | 11.8 | | 11.9 | |
| 1940-44 | (B) | 10.0 | — | 11.1 | 0.2 | 11.7 | 0.3 | 12.0 | 0.4 | 12.1 | 0.4 | 12.2 | 0.4 | 12.2 | 0.4 | 12.3 | 0.4 |
| | (C) | 10.0 | — | 11.1 | 0.2 | 11.8 | 0.4 | 12.1 | 0.5 | 12.2 | 0.5 | 12.3 | 0.5 | 12.3 | 0.5 | 12.4 | 0.5 |
| | (A) | 5.1 | | 5.6 | | 5.9 | | 6.0 | | 6.1 | | 6.1 | | 6.2 | | 6.2 | |
| 1945-49 | (B) | 5.1 | — | 5.7 | 0.1 | 6.1 | 0.2 | 6.2 | 0.2 | 6.3 | 0.2 | 6.3 | 0.2 | 6.4 | 0.2 | 6.4 | 0.2 |
| | (C) | 5.1 | — | 5.7 | 0.1 | 6.1 | 0.2 | 6.3 | 0.3 | 6.3 | 0.2 | 6.4 | 0.3 | 6.4 | 0.2 | 6.5 | 0.3 |
| | (A) | 2.6 | | 2.9 | | 3.0 | | 3.1 | | 3.1 | | 3.2 | | 3.2 | | 3.2 | |
| 1950-54 | (B) | 2.6 | — | 2.9 | — | 3.1 | 0.1 | 3.2 | 0.1 | 3.2 | 0.1 | 3.3 | 0.1 | 3.3 | 0.1 | 3.4 | 0.2 |
| | (C) | 2.6 | — | 2.9 | — | 3.1 | 0.1 | 3.2 | 0.1 | 3.3 | 0.2 | 3.3 | 0.1 | 3.3 | 0.1 | 3.4 | 0.2 |
| | (A) | 1.3 | | 1.5 | | 1.5 | | 1.6 | | 1.6 | | 1.7 | | 1.7 | | 1.7 | |
| 1955-59 | (B) | 1.3 | — | 1.5 | — | 1.6 | 0.1 | 1.6 | — | 1.7 | 0.1 | 1.7 | — | 1.8 | 0.1 | 1.8 | 0.1 |
| | (C) | 1.3 | — | 1.5 | — | 1.6 | 0.1 | 1.6 | — | 1.7 | 0.1 | 1.7 | — | 1.8 | 0.1 | 1.8 | 0.1 |

(1) = Estimated percentage prevalence of tuberculous infection.
(2) = Increase of prevalence on assumptions (B) and (C) compared with assumption (A).
(A) = No increase of the risk of infection with age after 13 years of age.
(B) = An increase in the risk of infection between 13 and 25 years of age (see text).
(C) = An increase in the risk of infection between 13 and 30 years of age (see text).

tion under each of the three assumptions. In contrast to the prevalence figures in Table 9, Table 10 shows that the incidence of primary infection among adolescents and young adults is substantially influenced by the assumptions on the risk of infection and age in those cohorts in which the average annual risk of infection is high. In the cohort born in 1910-14, on average 1,230 persons per 100,000 aged 15-19 and 775 persons per 100,000 aged 20-24 would have been infected annually in the Netherlands during the periods 1925-29 and 1930-34 respectively, if the risk of infection did not depend on age. However, in the same cohort some 1,627 persons aged 15-19 and 914 aged 20-24 would have been infected according to assumption (B); and 1,627 and 1,033 subjects respectively according to assumption (C). On the other hand, the numbers of primary infections among those aged 30 years and more would have been slightly lower on assumption (B) and (C) than on assumption (A).

Again for prediction purposes it is important to note that the differences between the three series of incidence data are of little importance for the more recent cohorts, as the absolute numbers infected would be small (see Table 10).

The results of the three series of prevalence and incidence figures in relation to a possible dependence of the infection risk on age in adolescents and young adults therefore reveal that in the Netherlands, with the present trend in the risk of tuberculous infection, the existence of such a dependence would make no important practical difference to future predictions.

In the later sections of this paper we shall therefore present data on the prevalence and incidence of infection based on the assumption that there is *no* increase in the risk of infection with age after 13 years of age.

TABLE 10

*Estimated mean annual incidence of primary tuberculous infection per 100,000 population in five-year age-groups for cohorts born in 1910-14 to 1955-59 according to three assumptions on the dependence of the risk of infection on age, The Netherlands*

| Cohort born in | | 10-14 (1) | 10-14 (2) | 15-19 (1) | 15-19 (2) | 20-24 (1) | 20-24 (2) | 25-29 (1) | 25-29 (2) | 30-34 (1) | 30-34 (2) | 35-39 (1) | 35-39 (2) | 40-44 (1) | 40-44 (2) | 45-49 (1) | 45-49 (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (A) | 2074 | | 1230 | | 775 | | 481 | | 236 | | 113 | | 55 | | 27 | |
| 1910-14 | (B) | 2107 | +33 | 1627 | +397 | 914 | +139 | 419 | −62 | 206 | −30 | 98 | −15 | 48 | −7 | 23 | −4 |
| | (C) | 2107 | +33 | 1627 | +397 | 1033 | +258 | 528 | +47 | 192 | −44 | 92 | −21 | 45 | −10 | 22 | −5 |
| | (A) | 1998 | | 1257 | | 782 | | 385 | | 184 | | 90 | | 44 | | 22 | |
| 1915-19 | (B) | 2030 | +32 | 1678 | +421 | 952 | +170 | 347 | −38 | 166 | −18 | 81 | −9 | 40 | −4 | 20 | −2 |
| | (C) | 2030 | +32 | 1678 | +421 | 1074 | +292 | 448 | +63 | 159 | −25 | 78 | −12 | 38 | −6 | 19 | −3 |
| | (A) | 1818 | | 1132 | | 559 | | 267 | | 130 | | 64 | | 32 | | 16 | |
| 1920-24 | (B) | 1849 | +31 | 1515 | +383 | 702 | +143 | 249 | −18 | 122 | −8 | 60 | −4 | 30 | −2 | 15 | −1 |
| | (C) | 1849 | +31 | 1515 | +383 | 790 | +231 | 326 | +59 | 119 | −11 | 59 | −5 | 29 | −3 | 14 | −2 |
| | (A) | 1500 | | 741 | | 354 | | 173 | | 85 | | 42 | | 21 | | 10 | |
| 1925-29 | (B) | 1523 | +23 | 995 | +254 | 456 | +102 | 167 | −6 | 82 | −3 | 41 | −1 | 20 | −1 | 10 | — |
| | (C) | 1523 | +23 | 995 | +254 | 515 | +161 | 220 | +47 | 82 | −3 | 40 | −2 | 20 | −1 | 10 | — |
| | (A) | 919 | | 439 | | 215 | | 106 | | 53 | | 26 | | 13 | | 7 | |
| 1930-34 | (B) | 933 | +14 | 593 | +154 | 281 | +66 | 104 | −2 | 52 | −1 | 26 | — | 13 | — | 7 | — |
| | (C) | 933 | +14 | 593 | +154 | 317 | +102 | 138 | +32 | 51 | −2 | 26 | — | 13 | — | 7 | — |
| | (A) | 517 | | 253 | | 125 | | 62 | | 31 | | 15 | | 8 | | 7 | |
| 1935-39 | (B) | 525 | +8 | 343 | +90 | 165 | +40 | 61 | −1 | 31 | — | 15 | — | 8 | — | 7 | — |
| | (C) | 525 | +8 | 343 | +90 | 186 | +61 | 81 | +19 | 31 | — | 15 | — | 8 | — | 6 | −1 |
| | (A) | 285 | | 141 | | 70 | | 35 | | 17 | | 9 | | 7 | | 7 | |
| 1940-44 | (B) | 289 | +4 | 191 | +50 | 93 | +23 | 35 | — | 17 | — | 9 | — | 7 | — | 7 | — |
| | (C) | 289 | +4 | 191 | +50 | 105 | +35 | 46 | +11 | 17 | — | 9 | — | 7 | — | 7 | — |
| | (A) | 150 | | 74 | | 37 | | 18 | | 10 | | 8 | | 8 | | 8 | |
| 1945-49 | (B) | 153 | +3 | 101 | +27 | 49 | +12 | 18 | — | 10 | — | 8 | — | 8 | — | 8 | — |
| | (C) | 153 | +3 | 101 | +27 | 56 | +19 | 25 | +7 | 10 | — | 8 | — | 8 | — | 8 | — |
| | (A) | 77 | | 38 | | 19 | | 10 | | 8 | | 8 | | 8 | | 8 | |
| 1950-54 | (B) | 78 | +1 | 52 | +14 | 25 | +6 | 10 | — | 8 | — | 8 | — | 8 | — | 8 | — |
| | (C) | 78 | +1 | 52 | +14 | 29 | +10 | 13 | +3 | 8 | — | 8 | — | 8 | — | 8 | — |
| | (A) | 39 | | 19 | | 10 | | 8 | | 8 | | 8 | | 8 | | 8 | |
| 1955-59 | (B) | 40 | +1 | 27 | +8 | 13 | +3 | 8 | | 8 | — | 8 | — | 8 | — | 8 | — |
| | (C) | 40 | +1 | 27 | +8 | 16 | +6 | 11 | +3 | 8 | — | 8 | — | 8 | — | 8 | — |

(1) = Estimated annual incidence of primary tuberculous infection.
(2) = Increase of incidence on assumptions (B) and (C) compared with assumption (A).
(A) = No increase of the risk of infection with age after 13 years of age.
(B) = An increase in the risk of infection between 13 and 25 years of age (see text).
(C) = An increase in the risk of infection between 13 and 30 years of age (see text).

## VI. ESTIMATED PREVALENCE OF TUBERCULOUS INFECTION UP TO THE AGE OF 50 YEARS FOR COHORTS BORN FROM 1910 TO 1960

The estimates of prevalence of tuberculous infection in the cohorts born in the year 1910, and subsequently at five-year intervals, for those aged 4, 9, 14 ... 49 years are given in Table 11 and Figure 3. For the individual cohorts each curve is similar in that the curves rise very steeply during childhood. The curve continues to rise less markedly during adolescence, and after about 25 years of age is nearly flat. However, the prevalence at individual ages has changed dramatically during the fifty years. For example, Table 11 shows that the percentage prevalence at age 14 years was 70.0% for the cohort of 1910, but had already decreased to 3.5% for the cohort of 1950, and will have decreased to 0.9% for the cohort of 1960. At age 49 years, the prevalence for the cohort of 1910 was 86.0%, but is likely also to decrease

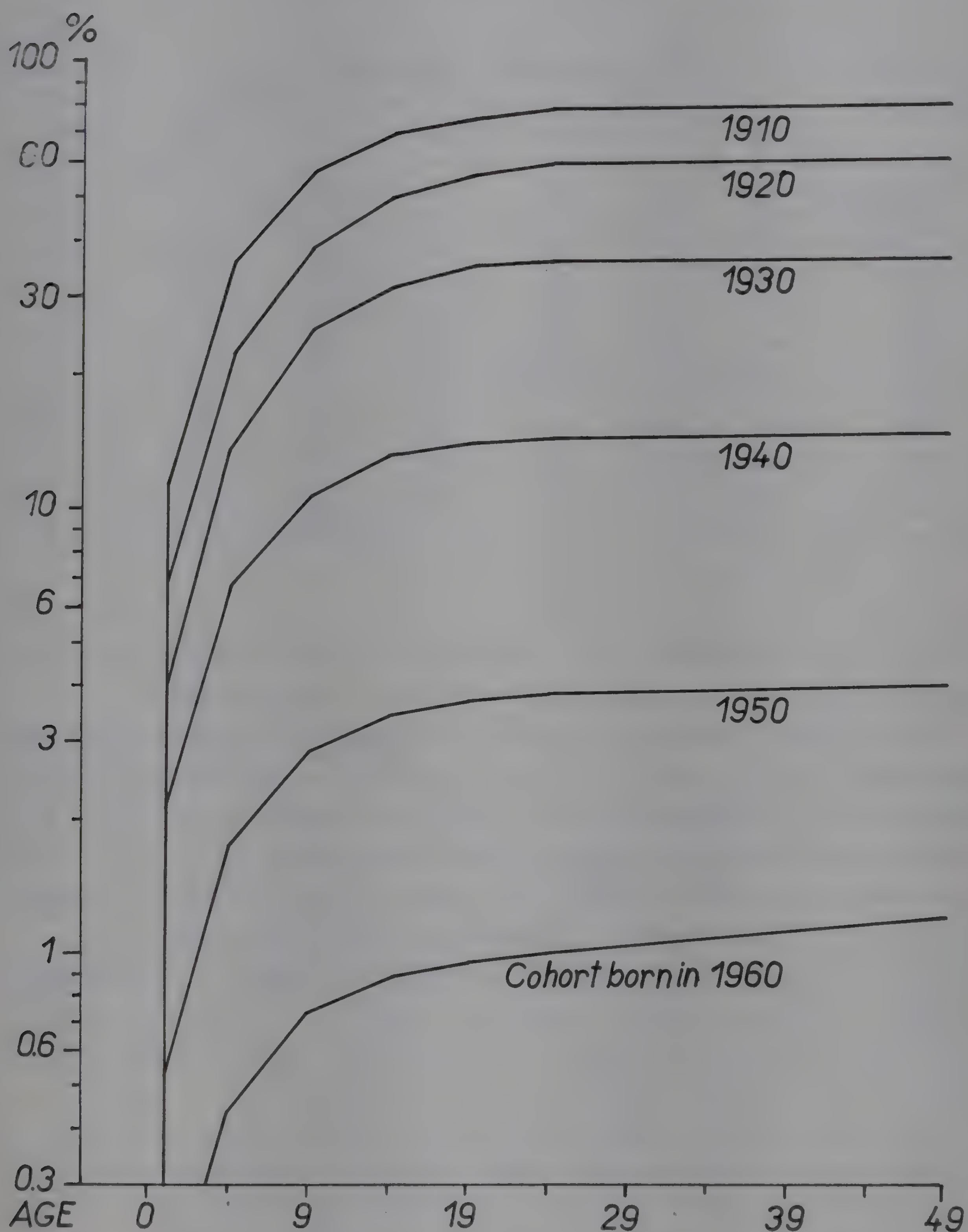
TABLE 11

*Estimated prevalence of tuberculous infection per 100,000 population at five-year intervals for cohorts born from 1910 to 1960. The Netherlands (Risk of infection assumed independent of age)*

| Cohort born in the year | Prevalence of tuberculous infection at age (years) 4 | 9 | 14 | 19 | 24 | 29 | 34 | 39 | 44 | 49 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1910 | 35,790 | 58,352 | 70,027 | 76,656 | 80,694 | 83,288 | 84,783 | 85,481 | 85,819 | 85,985 |
| 1915 | 28,578 | 48,599 | 59,967 | 66,892 | 71,341 | 73,905 | 75,101 | 75,680 | 75,966 | 76,108 |
| 1920 | 22,566 | 39,691 | 50,123 | 56,826 | 60,689 | 62,490 | 63,363 | 63,794 | 64,008 | 64,114 |
| 1925 | 17,661 | 31,903 | 41,054 | 46,328 | 48,788 | 49,980 | 50,568 | 50,860 | 51,005 | 51,078 |
| 1930 | 13,727 | 25,320 | 32,002 | 35,119 | 36,629 | 37,374 | 37,743 | 37,927 | 38,020 | 38,066 |
| 1935 | 10,612 | 18,610 | 22,341 | 24,148 | 25,040 | 25,482 | 25,702 | 25,813 | 25,869 | 25,903 |
| 1940 | 6,698 | 10,975 | 13,046 | 14,069 | 14,575 | 14,828 | 14,955 | 15,019 | 15,058 | 15,097 |
| 1945 | 3,419 | 5,666 | 6,775 | 7,325 | 7,599 | 7,737 | 7,807 | 7,849 | 7,890 | 7,932 |
| 1950 | 1,731 | 2,886 | 3,458 | 3,744 | 3,888 | 3,960 | 4,004 | 4,048 | 4,091 | 4,134 |
| 1955 | 873 | 1,458 | 1,749 | 1,896 | 1,970 | 2,015 | 2,059 | 2,103 | 2,147 | 2,191 |
| 1960 | 437 | 732 | 880 | 955 | 1,000 | 1,045 | 1,089 | 1,134 | 1,178 | 1,223 |

FIG. 3

*Estimated percentage prevalence of tuberculous infection in cohorts born from 1910 to 1960 according to age, The Netherlands*




steeply for later cohorts. The estimate for the cohort of 1960 at this age (which will be observed in the year 2009) is 1.2%.

The similarity of shape of the curves in Figure 3, in spite of their very different levels, is brought out in Table 12, which shows the prevalence at

TABLE 12

*Expected prevalence at ages 4, 9, 14, 19, and 24 years expressed as percentage of the expected prevalence at the age of 50 years for cohorts born from 1910 to 1955, The Netherlands*

| Cohort born in the year | Relative prevalence reached at age of | | | | | | Percentage prevalence at age 50 |
|---|---|---|---|---|---|---|---|
| | 4 yrs | 9 yrs | 14 yrs | 19 yrs | 24 yrs | 50 yrs | |
| 1910 | 42 | 68 | 81 | 89 | 94 | 100 | 86.0 |
| 1915 | 38 | 64 | 79 | 88 | 94 | 100 | 76.1 |
| 1920 | 35 | 62 | 78 | 89 | 95 | 100 | 64.1 |
| 1925 | 35 | 61 | 80 | 91 | 96 | 100 | 51.1 |
| 1930 | 36 | 67 | 84 | 92 | 96 | 100 | 38.1 |
| 1935 | 41 | 72 | 86 | 93 | 97 | 100 | 25.9 |
| 1940 | 44 | 73 | 86 | 93 | 97 | 100 | 15.1 |
| 1945 | 43 | 71 | 85 | 92 | 96 | 100 | 7.9 |
| 1950 | 42 | 70 | 84 | 90 | 94 | 100 | 4.1 |
| 1955 | 40 | 66 | 80 | 86 | 90 | 100 | 2.2 |
| Average | 40 | 67 | 82 | 90 | 95 | 100 | — |

ages 4, 9, 14, 19, and 24 years for each cohort, relative to the expected prevalence at age 50 years in the same cohort (which is taken as 100).

In each cohort about 40 percent of all infections up to the age of 50 occur during the first five years of life; at the age of 14 years about 80% of all infections up to the age of 50 years have already happened; and only 5% of individuals are first infected between their 25th and 50th year. These relative percentages are nearly the same throughout a period when the expected prevalence of infection at age 50 decreased from 86.0% to 2.2%.

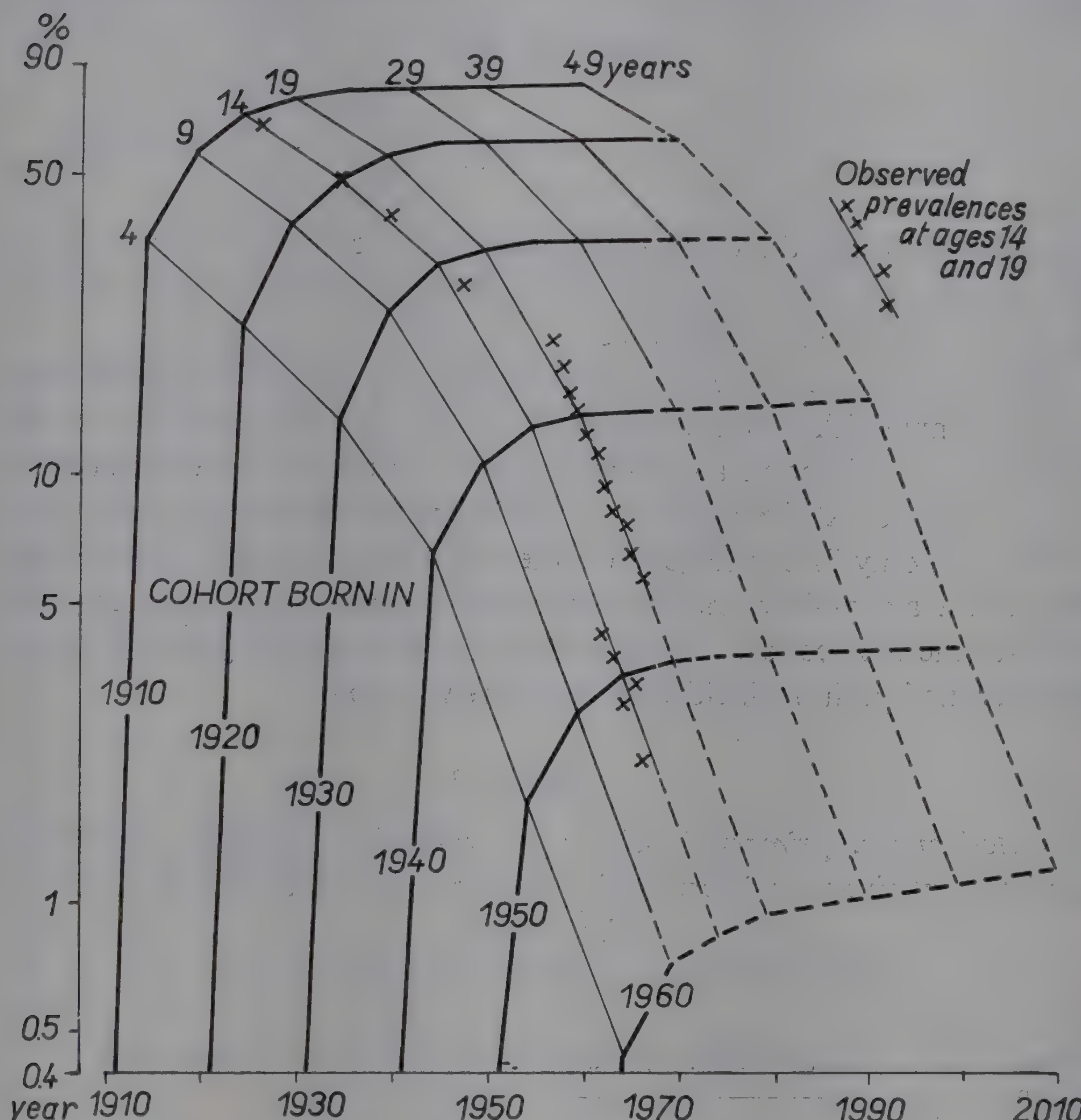
The observed prevalences of infection in the various survey years can be compared with the expected prevalences in Figure 4. This shows the expected prevalence of infection by age, cohort, and calendar year, with the observed figures at ages 14 and 19 indicated by means of crosses.

The observed and estimated infection prevalence figures at 14 years of age are closely similar, in spite of the fact that the 9 tuberculin surveys cover a period of forty years. The same is true for the estimated and observed figures for the 11 consecutive cohorts of recruits aged 19 years.

This agreement (already shown in detail in Tables 6, 7 and 8) confirms the essential reliability of the series of annual infection rates on which the whole of Figure 4 is based, and therefore in particular the reliability of the projections of the prevalence figures for the six cohorts beyond the year 1965 (shown by dashes on the Figure).

FIG. 4

*Estimated percentage prevalence of tuberculous infection in cohorts born from 1910 to 1960, The Netherlands*



## VII. ESTIMATED INCIDENCE OF NEW TUBERCULOUS INFECTION UP TO THE AGE OF 50 YEARS, FOR COHORTS BORN FROM 1910 TO 1960

Data on the estimated incidence of infected individuals for cohorts born in 1910 and at subsequent five-year intervals for those aged 4, 9, 14, ... 49 years are given in Table 13 and Figure 5.

Table 13 and Figure 5 show that the effects of the steady decrease in the average annual risk of infection, from 11.31% in 1910 to 0.13% in 1960 (Table 5), were different at different ages. For instance, the incidence of primary infection at the age of 4 was 5,898 per 100,000 for the cohort born in 1910, and only 77 per 100,000 for the cohort born in 1960. On the other hand, at the age of 49 years the corresponding figures were 21 for the 1910, and 9 for the 1960 cohort. The decrease was very much larger at age 4 than at age 49, and both the incidences at age 49 were low.

TABLE 13

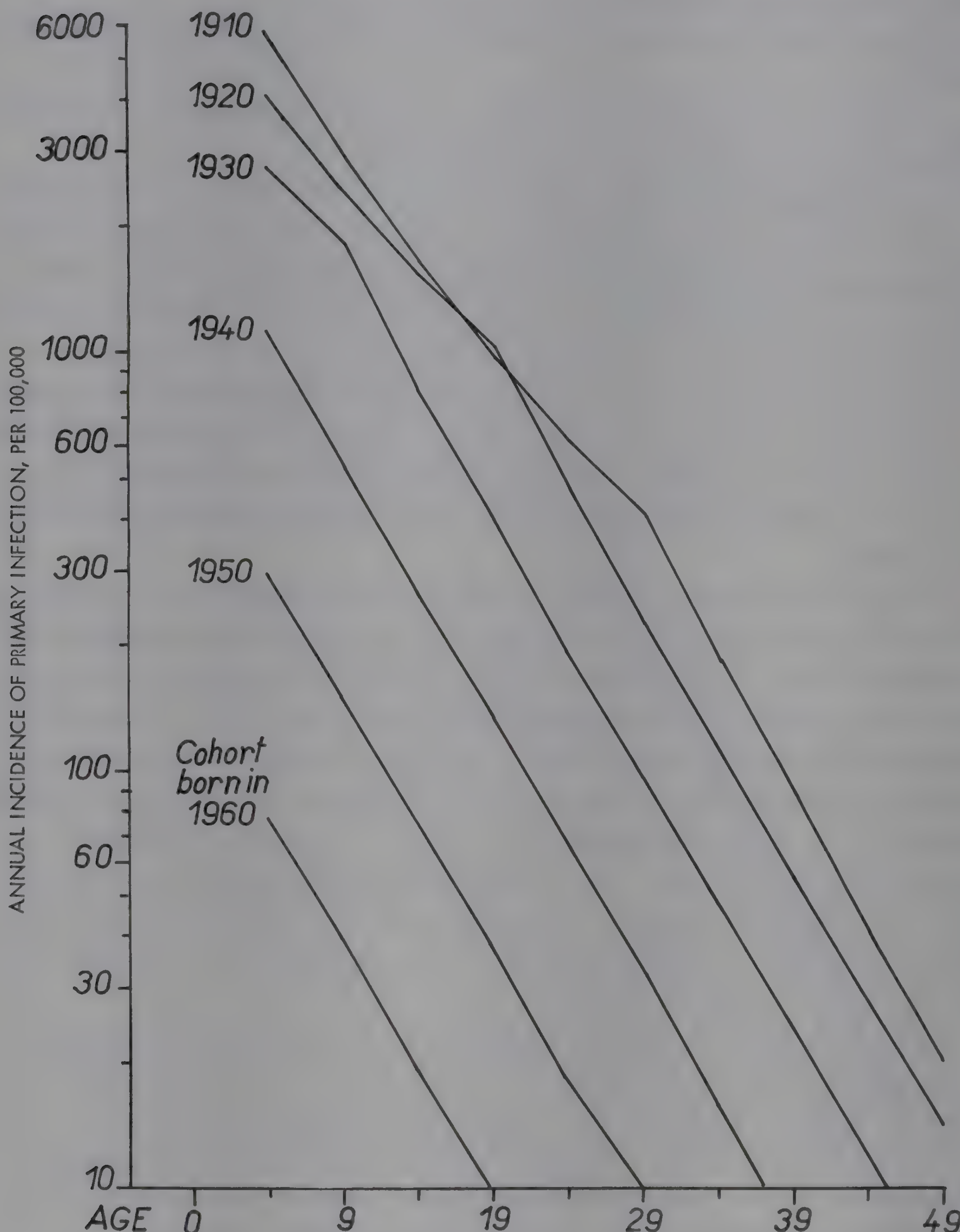
*Estimated annual primary incidence of tuberculous infection per 100,000 population at five-year intervals for cohorts born from 1910 to 1960, The Netherlands*

*(Risk of infection assumed independent of age)*

| Cohort born in the year | Estimated annual primary tuberculous infection at age (years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 4 | 9 | 14 | 19 | 24 | 29 | 34 | 39 | 44 | 49 |
| 1910 | 5,898 | 2,940 | 1,622 | 966 | 610 | 403 | 184 | 88 | 43 | 21 |
| 1915 | 5,042 | 2,781 | 1,657 | 1,047 | 691 | 315 | 151 | 74 | 37 | 18 |
| 1920 | 4,190 | 2,496 | 1,577 | 1,041 | 474 | 228 | 112 | 55 | 28 | 14 |
| 1925 | 3,408 | 2,153 | 1,421 | 647 | 311 | 153 | 76 | 38 | 19 | 9 |
| 1930 | 2,727 | 1,801 | 820 | 394 | 193 | 96 | 48 | 24 | 12 | 6 |
| 1935 | 2,155 | 982 | 471 | 231 | 115 | 57 | 29 | 14 | 7 | 7 |
| 1940 | 1,125 | 540 | 265 | 131 | 66 | 33 | 16 | 8 | 8 | 8 |
| 1945 | 586 | 288 | 143 | 71 | 36 | 18 | 9 | 8 | 8 | 8 |
| 1950 | 300 | 149 | 74 | 38 | 18 | 10 | 9 | 9 | 9 | 9 |
| 1955 | 152 | 76 | 38 | 19 | 10 | 9 | 9 | 9 | 9 | 9 |
| 1960 | 77 | 39 | 19 | 10 | 9 | 9 | 9 | 9 | 9 | 9 |

FIG. 5

*Estimated annual incidence of primary tuberculous infection in cohorts born from 1910 to 1960, The Netherlands*




In the youngest children, the decrease in incidence of primary infection is closely related to the decrease in risk of infection during the fifty years. However, the incidence of primary infection is the product of the risk of infection and the proportion of the population remaining uninfected at a particular age, and for older children and adults the second factor becomes

important. Because the proportions of adults and older children remaining uninfected have increased during the fifty years, the decrease in the incidence of primary infection is much less among adults, and less among older children than among young children.

It is convenient to consider the curves in Figure 5 in three different age-periods:

(a) 0-14 years: There was an extensive, steady decrease in the incidence of primary infections from one cohort to the next.

(b) 15-39 years: There was a similar decrease in the incidence from cohort to cohort after the cohort of 1930, but the incidence figures for the 1910 and 1920 cohorts are very similar between the ages of 15 and 25 years. This is a consequence of the very high annual risks of infection to which these cohorts were subject, and will be examined more closely later in this section.

(c) 40 years and over: The incidence of primary infections in all the cohorts was low above the age of 40 years. It is of particular epidemiological importance that the incidence of primarily infected individuals at this age was low for the 1910 and 1920 cohorts, and will remain low in the future for the later cohorts.

In view of the similar incidence of primary infections between the ages of 15 and 25 for the cohorts of 1910 and 1920, it is of interest to enquire what the situation was for earlier cohorts still. This involves making assumptions about the annual risk of tuberculous infection before 1910. The series of figures for the annual risk in Table 5 has been extended backwards for 15 years, according to two assumptions: (1) The annual risk of infection for the period 1895 to 1909 was constant at 11.31%, i.e. the risk calculated for the year 1910; (2) The annual risk of tuberculous infection decreased between 1895 and 1910 at the same rate as it did from 1910 onwards (5% per year). This corresponds to a steady decrease in the annual risk of infection from 19.0% in 1895 to 11.3% in 1910.

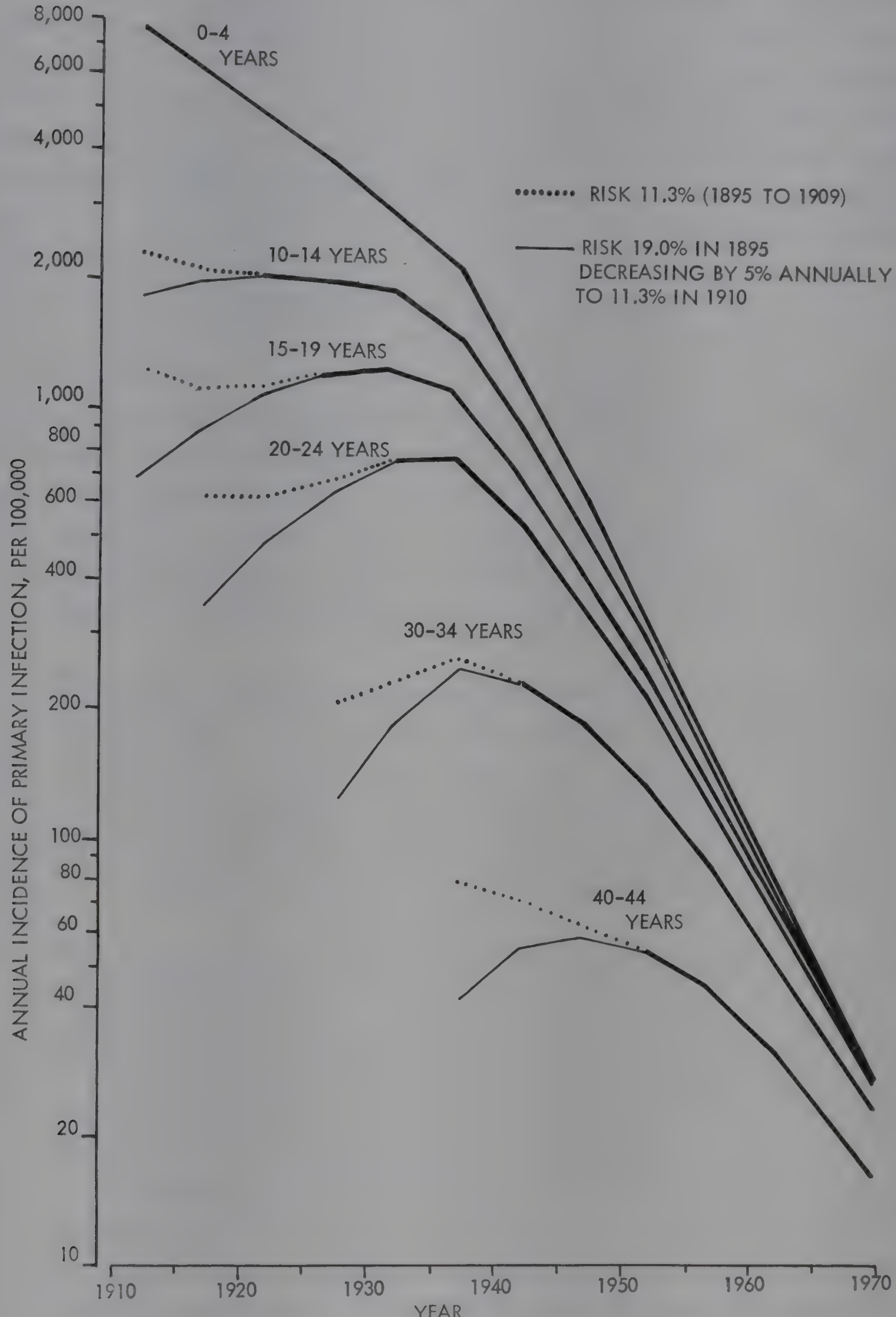
Figure 6 presents the incidence figures according to calendar year instead of by cohorts, for the age-group 0-4, 15-19, 20-24, 30-34, and 40-44 years. Each curve (apart from that for 0-4 years which is complete) has been extended backwards for 15 years along two lines. The upper line corresponds to assumption (1), of a constant annual risk of infection before 1910, and the lower line to assumption (2), of a decreasing risk before 1910.

At ages 0-4 there was a steep decrease in the incidence of primary infections from 1910 onwards, but at ages 10-14 the annual incidence remained nearly constant at a level of about 2,000 per 100,000 from 1910 to 1930 before beginning to decrease.

At ages 15 to 19 and 20 to 24 the trends are of particular interest because of the serious consequences of primary infection at these ages. Despite the

FIG. 6

*Estimated annual incidence of primary tuberculous infection according to age, The Netherlands, 1910 to 1970*



decrease in annual risk of infection after 1910, the annual incidence of new infections in these two age-groups first increased a little, then remained at a high level (about 1,000 per 100,000 population), and only decreased substantially after 1940.

At ages 30-34 there is also evidence of an initial increase in annual incidence of primary infections, with a peak between 1935 and 1940, but at a lower level, of about 200 per 100,000 population. The position is less clear at ages 40-44 without more information about the annual risk of infection before 1895, but it is clear that the incidence of primary infections at these ages will never have been very high.

# VIII. A PRACTICAL METHOD FOR ESTIMATING THE INFECTION RISK IN A PARTICULAR CALENDAR YEAR

The approach used in Sections I to IV of this paper for estimating the average annual risks of tuberculous infection in the Netherlands is complicated, partly because nothing was previously known about the way in which the risk of infection was changing and this had to be carefully assessed, and partly because it was desirable in the process to make comprehensive use of the extensive prevalence data available in that country. As a result of this analysis it has been established that the risk of infection has been decreasing during each of two long periods of time in the Netherlands in a way which closely approximates to an exponential decrease, with different rates of decrease in the two periods. Moreover, there does not appear to have been a strong relationship between age and the risk of infection each year, so that it was reasonable to assign a single estimate of the risk to an individual calendar year.

It is desirable for routine tuberculosis control to have a practical method of estimating annual risks of tuberculous infection in circumstances where there are much less extensive prevalence data than are available in the Netherlands. Such a method may be derived quite simply from the findings of the present study if it is assumed that, as in the Netherlands, any decrease in the risk of infection is nearly exponential, and that the risk does not vary with age.

On these assumptions, equation (6) in the Appendix expresses the mathematical relationship between the proportion of the cohort, born at time $b$, who have been infected by age $a$, and the annual risk of infection at a chosen time $x$. Appendix Table B, which is calculated from equation (6), consists of a series of tables for different ages, enabling the risk of infection to be determined directly from the prevalence figure at the particular age. To use this table, one additional piece of information is needed, namely an estimate of the percentage decrease in the risk of infection each year. For each of the tabulated values of this percentage decrease, Appendix Table B gives the risk of tuberculous infection in the calendar year in which the prevalence was determined, and the risk a few years earlier (5 years earlier for those examined at ages 5-9 years, 10 years earlier for those aged 10-14 and 15 years earlier for those aged 15-19).

The only difficulty in using this table is the prior assessment of the percentage decrease in the risk of infection each year.

(a) If only one measure of the prevalence of infection is available, there is no alternative to guessing the annual percentage decrease in risk of infection. In this connection, the decrease in the annual infection risk in the Netherlands amounted to about 5 percent annually before 1940, and about 13 percent annually since 1940.

(b) If more than one measure of the prevalence of infection is available, but *at different ages*, the best way of proceeding is as follows. Consider one prevalence figure. Using the section of Appendix Table B for the appropriate age, consult the first columns, corresponding to an annual decrease of 1 %, which will provide two estimates of the annual infection risk in different calendar years. Two more estimates, again on the basis of a 1 % decrease, are obtained similarly for each prevalence figure. These estimates are all plotted on logarithmic graph paper (the infection risk along the logarithmic scale and the year along the arithmetic scale). A straight line with a decrease of 1 % per year is then drawn as closely as possible through the points on the graph. The process is repeated for annual decreases of 3, 5, 7, 9, 11 and 13 percent. The best estimate of the percentage decrease each year is provided by the graph for which the points lie closest to the straight line drawn on it, and this line will provide the required estimates of the annual infection risks each year over the period covered by the graph.

(c) If, however, more than one measure of the prevalence of infection is available for subjects *of the same age*, an estimate of the annual percentage decrease may be derived directly from Appendix Table C, by dividing the entry in the table, corresponding to any two of the observed prevalences, by the interval in years between them. If there are several such estimates, they may be averaged.

There are therefore two steps in assessing the annual risks of tuberculous infection from a prevalence figure:

(1) Estimate the percentage decrease in the risk of annual infection
    (a) by guessing, if no other prevalence data are available;
    (b) by trial and error, as just explained, if other prevalence figures are available for subjects of a different age;
    (c) by use of Appendix Table C, if other prevalence figures are available for subjects of the same age.

(2) Using this estimate of the percentage decrease, Appendix Table B will provide direct assessments of the risk of tuberculous infection in two

calendar years, namely the year in which the prevalence was determined, and a few years earlier. The table may be used for percentage decreases, or for prevalences, which are not the same as those tabulated, by linear interpolation.

As an example of the use of the method, consider the Dutch male recruits aged 19½ years in 1966, for whom the observed percentage was 6.0. In 1956 the corresponding figure was 21.5 percent. In Appendix Table C the closest entry, corresponding to 22 percent and 6 percent, is 139 and this, when divided by 10, the interval in years, gives an approximate annual percentage decrease in infection risk of 13.9 which has been taken as 13 for convenience.

Appendix Table B gives the annual risks of infection. From the 1966 prevalence figure, these are 0.069 percent for the year 1966 and 0.486 percent, for the year 1951. From the 1956 prevalence figure (by interpolation) the risks are 0.271 percent for 1956 and 1.886 percent for 1941. These may be compared with the smoothed values of 0.07, 0.49, 0.25 and 1.90 respectively for males from the comprehensive analysis in Section II (1) (the last of these figures, for 1941, is given in the final column of Table 2, but the figures for males in the other years are not tabulated). It is thus evident that this method represents a highly satisfactory alternative to the comprehensive approach of Sections I to IV, and would be of considerable practical value in territories with limited prevalence data.

# IX. OTHER METHODS FOR ESTIMATING THE RISK OF TUBERCULOUS INFECTION DURING CHILDHOOD IN DIFFERENT CALENDAR YEARS

Extensive data on the prevalence of past infection, as available in the Netherlands, are lacking in most countries. Two other methods for estimating the infection risk during childhood, which may be of value in countries with more limited data, will now be described.

(1) *Direct estimation of the infection risk at a particular age*

A direct measurement of the infection risk may be made by testing the same group of persons on two (or more) occasions. The infection risk is measured by calculating the percentage of persons who show tuberculin *conversion* during the intervening period.

In order to compensate for technical variations in performing the tuberculin test, it would be necessary to adjust this percentage to an unbiased estimate of the infection risk by subtracting from it the percentage of persons who appear to show *reversion* during the period. It might also be necessary to make allowance for the boosting effect of repeated tuberculin testing.

This approach has been used by a number of workers in the past, notably in Denmark (Madsen, Holm and Jensen, 1942) and in Great Britain (Daniels et al., 1948) and is currently used extensively in Norway, both as an epidemiological and as a case-finding procedure (Galtung, personal communication). Unfortunately it is not possible to make direct estimations of the infection risk in the Netherlands as the requisite data are not available (for example, those with 10 mm induration or more at earlier surveys are not retested).

Moreover, it should be noted that in any scheme for direct measurement of the infection risk, information on the prevalence of tuberculous infection will automatically be collected at the same time. By applying the approaches of the present report to this prevalence data, estimates may be made both of the current infection risk and of past infection risks. The direct information on the conversion rate will provide a second estimate of the current risk of infection only, and its additional value is therefore limited.

(2) *Estimation of the risk of infection from the number of cases of tuberculous meningitis in children aged 0-4 years*

The annual risk of infection can be estimated approximately from the number of cases of tuberculous meningitis in children aged 0-4 years (Holm, Radkovský, personal communications).

The estimated average risks of tuberculous infection from 1920 to 1949 are compared with the mortality rates from tuberculous meningitis in children aged 0-4 years in the Netherlands in Table 14 and Figure 7. This comparison shows that during the pre-chemotherapy era there was a close correlation between the risk of infection in a year, and the number of deaths from tuberculous meningitis among children aged 0-4 years in that year. The ratio of the mortality to the risk of infection ranged from 0.7 to 1.0 percent between 1920 and 1939. During the first three years of the second World War it

FIG. 7

*Mortality rate from tuberculous meningitis in children aged 0-4 years and annual risk of tuberculous infection, The Netherlands, 1920 to 1949*

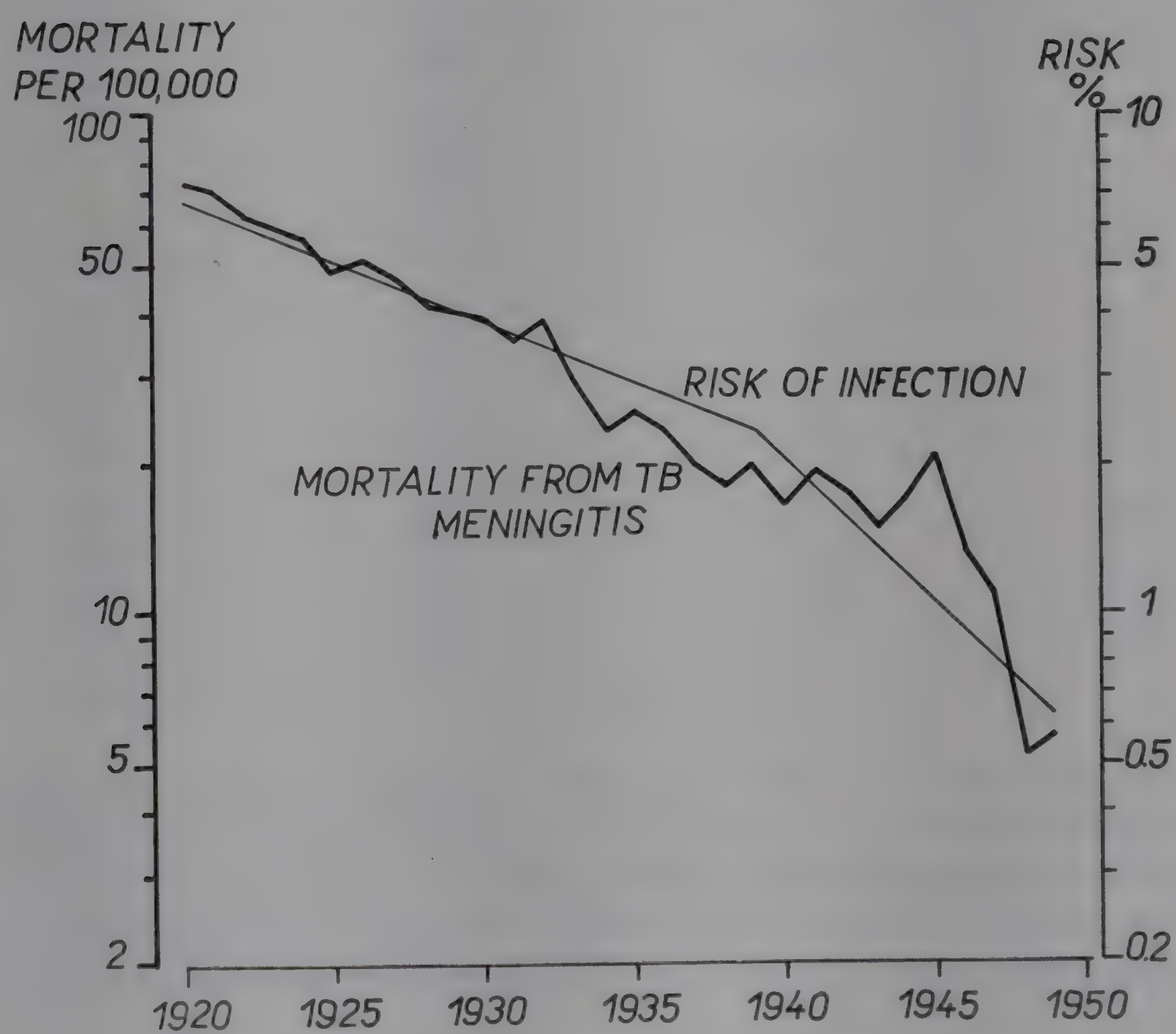


TABLE 14

*Mortality rate from tuberculous meningitis in children aged 0-4 in relation to the annual risk of tuberculous infection, The Netherlands, 1920 to 1949*

| Calendar year | Mortality rate from tuberculous meningitis in children aged 0-4 years; per 100,000 | Annual risk of tuberculous infection; per 100,000 | Risk of infection as a percentage of tuberculous meningitis mortality |
|---|---|---|---|
| 1920 | 73.16 | 6,690 | 1.09 |
| 1921 | 71.47 | 6,350 | 1.13 |
| 1922 | 63.46 | 6,020 | 1.05 |
| 1923 | 60.00 | 5,710 | 1.05 |
| 1924 | 57.01 | 5,410 | 1.05 |
| 1925 | 49.28 | 5,130 | 0.96 |
| 1926 | 50.47 | 4,860 | 1.04 |
| 1927 | 48.38 | 4,610 | 1.05 |
| 1928 | 43.21 | 4,370 | 0.99 |
| 1929 | 40.68 | 4,140 | 0.98 |
| 1930 | 38.50 | 3,920 | 0.98 |
| 1931 | 35.61 | 3,720 | 0.96 |
| 1932 | 38.92 | 3,520 | 1.11 |
| 1933 | 29.52 | 3,340 | 0.88 |
| 1934 | 23.56 | 3,160 | 0.75 |
| 1935 | 25.15 | 2,990 | 0.84 |
| 1936 | 23.38 | 2,840 | 0.82 |
| 1937 | 19.99 | 2,690 | 0.74 |
| 1938 | 17.90 | 2,550 | 0.70 |
| 1939 | 20.35 | 2,410 | 0.84 |
| 1940 | 16.26 | 2,080 | 0.78 |
| 1941 | 19.68 | 1,820 | 1.08 |
| 1942 | 17.19 | 1,590 | 1.08 |
| 1943 | 14.98 | 1,380 | 1.09 |
| 1944 | 16.88 | 1,210 | 1.40 |
| 1945 | 21.00 | 1,050 | 2.00 |
| 1946 | 13.47 | 920 | 1.46 |
| 1947 | 10.99 | 800 | 1.37 |
| 1948 | 5.13 | 700 | 0.73 |
| 1949 | 5.76 | 610 | 0.94 |

remained close to 1%. However, in 1945 — the year of the notorious famine in the Netherlands — it rose to 2.0%. From this it can be seen that the ratio under discussion, although relatively stable, is not a biological constant; it may be expected also that it will be higher in countries where socio-economic conditions are less favourable than the peacetime standard in the Netherlands.

This approach may be of special value for estimating the annual risk of infection in a period when no tuberculin surveys were made and no chemotherapy was available. It is suggested that, for the period between the two World Wars in most developed countries, a reasonable estimate would be that the annual mortality from tuberculous meningitis in children aged 0-4 years represents 1% of the annual risk of tuberculous infection. However, this estimate relates to a situation in which both human and bovine infections were occurring in unknown proportions. The estimate might be different in a country where there was little or no bovine infection.

# X. DISCUSSION

## (1) *The technique of estimating the annual risk of infection*

Although there have been a number of isolated instances where the prevalence of tuberculous infection at a particular age has been interpreted in terms of an average annual risk of primary tuberculous infection, the present report, as far as we are aware, represents the first attempt to make comprehensive use of prevalence data, obtained at tuberculin surveys, to assess the risk of tuberculous infection at a particular time, and to study how this risk has changed over a period of years.

In its application to the information available for the Netherlands, the attempt has proved very successful. It has revealed a surprising regularity in the trend of the risk of primary tuberculous infection over a period of more than 50 years in that country. Moreover, the risk of infection in a particular year does not appear to have varied greatly with age, at least up to the age of 20 years. (The possibility of a higher risk among very young children before the second World War due to bovine tuberculosis infection cannot be resolved with the available data). It is therefore possible to assign a single figure to each calendar year which summarises concisely the impact of tuberculous infection in that year upon the population aged up to 20 years, in a readily understandable form.

The trend in the annual risk of tuberculous infection in the Netherlands, derived from the prevalence data, is uniformly downward. From a risk of infection of 97 per 1,000 population in 1913, the risk decreased steadily by about 5% annually to a rate of 24 per 1,000 in 1939, and then decreased steadily by about 13% annually to a risk of infection of only 0.57 per 1,000 population in 1966. It is of particular interest that over each of these two periods of about 25 years, the trend in the risk of infection in the Netherlands closely followed an exponential decline. These findings would have been essentially similar if (say) a diameter of 6 mm or of 10 mm induration to 1 TU of RT 23 had been adopted, instead of 8 mm, as the lower limit indicating tuberculous infection.

The reliability of this series of estimates of the annual risk of primary

tuberculous infection in the Netherlands is confirmed by the closeness with which it reproduces the observed prevalences of past tuberculous infection at the various tuberculin surveys. These surveys cover the population cohorts born in each year from 1913 to 1954, several of these cohorts being observed at more than one age. The cohorts born from 1947 to 1954 were most recently observed in 1966, so that the reliability of the series of estimates of the risk of tuberculous infection has been confirmed over the entire period from 1913 to 1966. In particular, the prevalence figures indicate that there was no interruption in the steady and steep decline in infection risk during the second World War.

It should be possible to apply this approach, namely to interpret the prevalence of tuberculous infection found at a tuberculin survey in terms of a series of annual infection risks, to other territories which have made reasonably representative tuberculin surveys in unvaccinated subjects at more than one age, or on more than one occasion. The detailed method used in this report was dictated partly by the extent of the material available, partly by the need to discover whether the annual risk of infection varied with age, and partly because it was not known what form the trend in the annual infection risk would take. However, in investigating the application of this approach to another territory, it would be reasonable to assume as a first approximation that the risk of infection in any particular year was independent of age, and that any change in annual risk over the years was exponential in form. With these assumptions, the practical method described in Section VIII above may be used to obtain estimates of both current and past risks of infection. Even if the available information is neither as extensive nor as carefully collected as in the Netherlands, this practical method will give a useful indication, both of the level of the risk of tuberculous infection, and its trend in time.

For periods not covered by tuberculin surveys, or in areas where no such surveys have been made, it may be possible to estimate the annual risk of infection from mortality figures for tuberculous meningitis in young children in the absence of chemotherapy (Section IX), but this approach is likely to be less reliable because the mortality from tuberculous meningitis may not exactly reflect the risk of infection.

If a number of tuberculin surveys have been made at a number of different ages, a more comprehensive analysis of the type outlined in Sections II and III and in the Appendix would be worth undertaking. This would make fuller use statistically of information which will already have been laborious to collect, and it should in addition provide some direct evidence both on the dependence of the risk of infection on age, and on the form of the trend in the annual risk of infection, in the territory concerned.

(2) *The trend of tuberculous infection in the Netherlands without and with special measures; 'self-elimination' of the disease*

Between 1910 and 1940 the risk of tuberculous infection in the Netherlands was falling by about 5% annually; since 1940 the decline has been steeper, namely, about 13% annually. Can anything be said about the causes of this phenomenon, or on factors that contributed to it?

Considering first the period up to the second World War it is possible to *exclude* certain factors from having contributed to the regular decrease of the infection risk. They did not exist at that time, or were not applied in the Netherlands. These are chemotherapy, mass BCG vaccination and mass radiographic surveys.

Nor could this steady decrease in the infection rate up to 1940 in the Netherlands have been caused by a decrease of bovine tuberculosis infection. Table 15 shows that the percentage of slaughtered cattle, rejected because of

TABLE 15

*Number of tuberculous cattle among slaughtered animals, The Netherlands, 1928-49*

| Year | No. of slaughtered cattle | No. | Rejected because of tuberculosis % |
|---|---|---|---|
| 1928 | 498,510 | 83,570 | 16.8 |
| 1929 | 485,585 | 90,104 | 18.6 |
| 1930 | 389,780 | 73,396 | 18.8 |
| 1931 | 352,667 | 74,815 | 21.2 |
| 1932 | 435,025 | 79,753 | 18.3 |
| 1933 | 539,790 | 92,524 | 17.1 |
| 1934 | 492,022 | 89,959 | 18.3 |
| 1935 | 470,815 | 87,519 | 18.6 |
| 1936 | 414,230 | 85,701 | 20.7 |
| 1937 | 365,968 | 73,980 | 20.2 |
| 1938 | 378,593 | 76,873 | 20.3 |
| 1939 | 463,169 | 90,554 | 20.3 |
| 1940 | 491,928 | 88,558 | 17.8 |
| 1941 | 579,115 | 87,451 | 15.4 |
| 1942 | 561,968 | 67,947 | 12.1 |
| 1943 | 296,482 | 41,075 | 13.9 |
| 1944 | 221,749 | 20,801 | 10.0 |
| 1945 | 244,072 | 29,999 | 13.4 |
| 1946 | 346,681 | 43,509 | 13.2 |
| 1947 | 462,428 | 59,993 | 13.4 |
| 1948 | 237,581 | 40,245 | 16.9 |
| 1949 | 279,452 | 48,030 | 17.2 |

tuberculosis, was fairly constant (between 17% and 21%) during the period 1928 to 1940. It is an established fact that during this period a large and constant proportion of tuberculous infections in childhood were caused by oral infections with the bovine tubercle bacillus. The frequency of mesenteric primary foci indicates that, at that time, about one third of young adults had their first contact with the tubercle bacillus by ingesting infected material (Korteweg, 1927; Straub, 1937), which was usually of bovine origin. These enterogenic infections were as frequent in 1937 as they had been in 1927. Only after the enactment of a law on milk pasteurization, in 1940, which was rigorously enforced, was a sharp decrease observed in the bovine tuberculosis infection rate at ages 0-15 years in the Dutch population (Ruys, 1946).

Treatment, including isolation in sanatoria since about 1920, improvements in housing and living conditions (except during the two World Wars and the economic depression of the thirties), and general antituberculosis measures may all have played some part in the decline of tuberculosis up to 1940, but it is not possible to assess their relative contributions, and it is uncertain whether their total effect was sufficient to explain the steady and substantial decline in infection risk (about 5% annually) for a thirty year period.

A similar decline has been observed in many other developed countries during the first half of this century. Moreover, in some the decrease in tuberculosis mortality even antedated the discovery of the tubercle bacillus in 1882. For instance, in England and Wales the reported mortality from tuberculosis was falling by 0.9% annually between 1861-65 and 1876-80 (Wolff, 1926).

Frost (1937) pointed out that "for the eventual eradication of tuberculosis it is not necessary that transmission be *immediately* and *completely* prevented. It is necessary only that the rate of transmission be held permanently below the level at which a given number of infection spreading (*i.e.*, open) cases succeed in establishing an equivalent number to carry on the succession. If, in successive periods of time, the number of infectious hosts is continuously reduced, the end-result of this diminishing ratio, if continued long enough, must be extermination of the tubercle bacillus." Assuming that the prevalence of bacillary cases was diminishing at approximately the same rate as tuberculosis mortality, he concluded "that under present conditions of human resistance and environment the tubercle bacillus is losing ground, and that the eventual eradication of tuberculosis requires only that the present balance against it be maintained." In other words, for tuberculosis to survive as a disease, a bacillary case of tuberculosis must, at the end of its existence, have caused enough infections to ensure that ultimately at least one new bacillary case will develop within the human population. As soon as a

situation is reached in which 100 cavitary cases succeed in regenerating only 98 or 95 such cases, a fundamental downward trend starts to operate. Once this 'breaking point' has been reached the disease is doomed, although it may then take a century or more to disappear.

The results in the present paper do not go sufficiently far back in time to tell us when the breaking point was reached in the Netherlands, except that it must have been before 1910. For this to have happened the number of persons infected by one bacillary source, multiplied by the risk that those infected would develop bacillary tuberculosis in their turn, had to fall below the critical value of 1; but information is lacking on both factors in this product at that time. We hope to comment further on this process of self-elimination of tuberculosis in a later report.

It appears from our analyses that the risk of infection was falling steadily through both the World Wars. In particular, the prevalence data for the cohorts born between 1937 and 1947 are not consistent with the hypothesis that there was any interruption in the decline during the second World War, although tuberculosis mortality and morbidity recorded a steep temporary increase during this period. This fall during the war years was first established by Heynsius van den Berg who in 1946 presented results of tuberculin tests made in 1936-40 and in 1941-43. These showed that the prevalence of infection in individual age groups had continued to fall during this period. He concluded that the increase of tuberculosis among the population had 'not been preceded by a higher infection rate'. In his opinion the numerous cases of tuberculosis which developed during the war were due to a flare-up of latent tuberculous lesions, and not to fresh infections. However, this does not explain the fact that a subsequent higher infection risk, which might have been expected to result from the rise in morbidity during the war years, also failed to materialize.

Figure 7 shows that the decline in risk of infection has been more rapid since 1940 than before, namely 13 percent annually. The immediate large reduction of bovine infection due to pasteurization (Ruys, 1946) seems to have been the main factor responsible, and there is no suggestion of even a temporary interruption during and after the war in the steady annual decline of 13 percent.

This unexpected phenomenon led us to estimate the possible increase in the number of sources of infection during the war. In order to simplify the calculation we supposed that, if the war had not occurred, both the annual numbers of deaths due to tuberculosis and the number of new cases of active tuberculosis from 1940 to 1945 would have remained the same as they were in 1939.

In the Netherlands a total of 3,604 deaths from tuberculosis, and a total

of 8,540 new cases of all forms of tuberculosis, were notified in 1939. The expected number of deaths from tuberculosis during 1940-45 would thus have been 21,624. However, a total of 35,928 deaths was notified; thus the excess mortality equalled 14,304, of which about 10,000 (70 %) were deaths from pulmonary tuberculosis and therefore heavy bacillary excretors.

The expected number of new cases of all forms of tuberculosis during the same period was 51,240 cases. A total of 90,692 cases was notified, representing an excess of 39,452. According to the data available (Annual Report of the Chief Medical Officer of Public Health), about 75 percent of the patients suffered, at that time, from pulmonary tuberculosis. Among them less than one-third were diagnosed as 'open' tuberculosis cases. Thus, the *excess incidence* of sources of infection (defined as 'open' cases of pulmonary tuberculosis) seems to have amounted during that period to about one-third of 30,000 cases, namely about 10,000 cases.

It follows from this rough calculation that the excess incidence of new sources of infection was approximately balanced by the excess deaths due to pulmonary tuberculosis, and this may explain why no increase in the risk of infection can be detected in the years following the second World War.

This analysis of the data indicates that the process of 'self-elimination' of tuberculous infection in the Netherlands was a very stable phenomenon during the period studied. In particular, it has been shown that the decline in the risk of infection continued even during the very unfavourable conditions of the two World Wars.

### (3) *Implications of knowledge of the annual risk of infection*

This analysis has shown that during the past fifty years in the Netherlands tuberculosis has behaved, to a close approximation, as if there was in each year a risk of acquiring a primary tuberculous infection which was the same at all ages up to an age of at least twenty years. This model and the estimates of the annual risks to which it leads have been remarkably successful in reproducing the observations on the prevalence of tuberculous infection at different ages during this period. On the assumption that this simple model, or something very like it, may also be found to hold in other territories, it is of interest to outline certain of its epidemiological consequences.

In the first place, if there is a constant risk of infection, a disproportionately large number of primary tuberculous infections will take place among children, and particularly among young children. For example, if the risk of infection is 2 percent per year, and does not vary from one calendar year to the next, or with increasing age, then, of the total number of primary infections that will take place in a cohort which it observed up to the age of 50 years, about 15 percent will take place during the first five years of life (which

is only 10 percent of the period), and about 41 percent by the age of fifteen years (which is only 30 percent of the period). This disproportion is a consequence of the diminishing numbers of uninfected individuals as the cohort grows older. This disproportion will be greater if the constant risk of infection is greater than 2% and less marked if the constant risk is less than 2%.

However, in countries such as the Netherlands, where the annual risk of tuberculous infection has been decreasing steeply, this tendency for primary tuberculous infections to occur early in the life of a cohort will be very much more marked, because the uninfected individuals in the cohort meet progressively *lower* risks of infection as they grow older. Table 12 showed that in the Netherlands, of all primary tuberculous infections occurring before the age of 50, as many as 40 percent occurred before the age of five years, and about 80 percent by the age of fifteen years. This pattern held for all cohorts born since 1910, despite the very different levels of risk of infection for the earlier and later cohorts. The pattern will be similar in other countries with a decreasing risk of tuberculous infection. This finding may be an important practical consideration affecting the most suitable age for BCG vaccination.

Secondly, the incidence of primary tuberculous infections in a particular age-group is the product of the risk of infection at the time and the proportion of individuals remaining uninfected by that age. For successive cohorts in the Netherlands the former was a decreasing factor and the latter an increasing factor. For the cohorts born in the period 1910 to 1920, the effects of these two opposing trends nearly balanced between the ages of 15 and 25 years (Table 10), with the result that the incidence of primary infections in this age-range remained nearly constant throughout the years 1925 to 1940, and has only since shown a steep decline (Figure 6). This may explain in part the continued high incidence of clinical tuberculosis in young adults during the nineteen thirties in the Netherlands, although the annual risk of tuberculous infection was decreasing steadily throughout the period.

Thirdly, the incidence of primary infections among those aged 40 or more has been low in the Netherlands for all cohorts since 1910, irrespective of the level of the risk of infection. When there was a high risk of infection, for the earlier cohorts, few individuals remained uninfected by the age of 40; when the risk of infection was at a lower level, for the later cohorts, many individuals remained uninfected by age 40, but because of the low risk thereafter, few were infected subsequently. It follows that the great majority of new cases of clinical tuberculosis after the age of 40, that have occurred in the past and are occurring at present in the Netherlands, cannot have closely followed primary infection, but must be attributed to endogenous exacerbation of the disease in those infected previously and/or to superinfection in later life. The respective contributions of these factors, which obviously depend on the risk

of infection, will be considered in a later paper.

The present study indicates that (apart from the possible influence of bovine tuberculosis infection in the first two years of life) there is little or no evidence of variation in the risk of infection at least up to the age of 20 years. There is not much information whether this also applies in other countries. Raj Narain et al. (1966) describe how, in India, the incidence of infection in different age-groups has been estimated from age-specific prevalence rates of infection by Bogen and by Frimodt-Møller as well as by themselves. The incidence rates calculated by Bogen were almost the same for different age-groups, with an average of 5.3 percent per annum. The rates estimated by Frimodt-Møller varied from 0.7 percent to 6.2 percent, and those by Raj Narain et al. from 0.9 percent to 4.4 percent, in different age-groups. Using the direct method (that is by repeating the tuberculin test in the same individual at a subsequent date) Frimodt-Møller concluded that the annual rate of infection with tubercle bacilli in South India was probably about 4 percent in all age groups.

The above epidemiological conclusions are based upon the assumption that the risk of tuberculous infection is independent of age up to an age of 50 years. The sections of the present report which examine the consequences of various hypotheses concerning the risk of infection above the age of puberty are thus of particular interest. Because the great majority of the primary tuberculous infections in each cohort have already occurred by the age of 15 years in the Netherlands, a rise in the risk of infection at higher ages, if it occurs, could only exert a small effect on the absolute numbers of primary infections occurring in adolescence and adult life. Thus, in any country in which the risk of tuberculous infection is falling, as in the Netherlands, it is of no practical importance whether the annual risk of infection increases in adolescence and early life above the level for younger children, or whether it remains constant up to the age of fifty years. It follows that the above consequences of the model of risk of infection, which describes the data for the Netherlands so adequately, are practically unaffected by any variation there may be in the annual risk of infection for those aged over 15 years.

(4) *The practical importance of determining the risk of tuberculous infection*

Tuberculosis being a communicable disease, knowledge of past and present risks of tuberculous infection in a population should be of value in planning a rational tuberculosis control or eradication programme. The level and the trend of the annual infection risk determine the epidemiological development of tuberculosis in the future, both among those at present uninfected and among those already infected. It is therefore of importance to determine the

infection risk in a population, and to make similar determinations at intervals in the future.

In some countries data on the prevalence of tuberculous infection on one or more occasions in the past are already available. From such data, using the approaches described in this paper, it should be possible to estimate the past level of the annual risk of tuberculous infection, and to obtain an indication of past trends in the risk. Even though such estimates may be only approximate because of uncertainties in interpreting the results of the tuberculin tests, or because unrepresentative samples were surveyed, they would provide valuable information to supplement the corresponding interpretation of data from current tuberculin surveys. In planning current surveys, special attention would naturally have to be paid to the selection of a suitably representative sample of the unvaccinated population at an appropriate age or ages, to the use of standardised test materials and techniques, and to the interpretation of the test results in terms of tuberculous or other mycobacterial infection.

In countries where mass vaccination against tuberculosis has not been part of the control programme, there is no special difficulty in making a tuberculin survey of a representative sample of unvaccinated children at any convenient age. Similarly in countries where children are first vaccinated on a mass scale several years after birth, surveys may readily be made on unvaccinated children at any convenient age up to that for mass vaccination. Indeed, in such countries preliminary tuberculin tests are normally made on children at the appropriate age for mass vaccination, and these potentially represent a survey of the prevalence of tuberculous infection at that age which, with proper standardisation of techniques, could provide information regularly on the risk of infection and its trend.

However, difficulties would arise in countries in which the great majority of infants are vaccinated against tuberculosis soon after birth, because there would be no representative sample of unvaccinated children available for a tuberculin survey (unless there was an older unvaccinated cohort born before the introduction of the infant vaccination scheme). In such circumstances it would be appropriate to choose a sample of newborn children at random, and tuberculin test them annually, offering chemoprophylaxis to protect any who acquired a tuberculous infection, and vaccination at the age of (say) 5 years to the remainder, as an alternative to vaccination at birth. This would provide information on the risk of tuberculous infection in the first five years of life, and this would be relevant to a consideration whether to continue vaccinating all newborn children.

The advantage of summarising the tuberculosis position in a country in terms of the risk of tuberculous infection in particular years is that it provides

a readily intelligible measure of the impact of tuberculosis on the community at different times. (Because of chemotherapy, tuberculosis mortality is no longer a valuable index for this purpose). This approach also offers a better means of bringing together, on a similar basis, the results of different tuberculin surveys at different times in the same country, and should facilitate comparisons of the tuberculosis situation in different countries. Moreover, as has been illustrated above with the data from the Netherlands, knowledge of the trend of the risk of infection should enable comprehensive predictions to be made for some years ahead, both of the prevalence of tuberculous infection, and of the expected incidence of primary tuberculous infections at different ages. This would provide guidance on the likely magnitude of the tuberculosis problem in a country during the next ten or fifteen years.

It is hoped in a later report to study the ways in which the development of clinical tuberculosis in a population at diffierent ages is related to the annual risk of tuberculous infection and its trend. The establishment of the relationships between infection with tubercle bacilli and the breakdown to clinical tuberculosis would greatly increase the practical value of knowledge of the risk of infection, as it would then become possible to predict the future pattern of clinical tuberculosis as well as that of tuberculous infection in a community.

LIBRARY

# APPENDIX

*The mathematical relationship between the incidence and the prevalence of tuberculous infection*

Consider a group, or cohort, of children, all born at the beginning of year $b$, who are followed until they are exactly $a$ years old. Let the risk of acquiring a tuberculous infection in a particular calendar year $t$ be $p_t$.

Then at the end of the year $b$, the proportion of the cohort which has been infected will be $p_b$; the proportion remaining uninfected will be $(1-p_b)$. At the end of the year $b+1$,

$p_b \cdot p_{b+1}$ will have been infected in both years,
$p_b \cdot (1-p_{b+1})$ will have been infected in the first year only,
$(1-p_b) \cdot p_{b+1}$ will have been infected in the second year only, and
$(1-p_b) \cdot (1-p_{b+1})$ will have escaped infection in both years.

The proportion of the cohort which will have been infected at least once by the age of two years, which will be written $P_{2,b}$, is therefore the sum of the first three expressions, which is the same as the last expression, subtracted from 1.

$$\therefore P_{2,b} = 1-(1-p_b) \cdot (1-p_{b+1})$$

If we write

$$(1-P_{2,b}) = Q_{2,b},\ (1-p_b) = q_b \text{ and } (1-p_{b+1}) = q_{b+1},$$

then this becomes

$$Q_{2,b} = q_b \cdot q_{b+1}$$

By age $a$ we have, similarly

$$P_{a,b} = 1-(1-p_b) \cdot (1-p_{b+1}) \cdot (1-p_{b+2}) \dots (1-p_{b+(a-1)}),$$

or more concisely,

$$Q_{a,b} = q_b \cdot q_{b+1} \cdot q_{b+2} \cdots q_{b+(a-1)} \tag{1}$$

$$\therefore \log Q_{a,b} = \sum_{t=b}^{b+(a-1)} \log q_t \tag{2}$$

In these formulae, $p_t$ and $q_t$ are regarded as if they were constant throughout a calendar year. If we replace $p_t$ by a continuously varying annual risk of infection with a value $p(t)$ at time $t$, and write $q(t) = 1-p(t)$, and $Q(a,b) = Q_{a,b}$, then formula (2) becomes

$$\log Q(a,b) = \int_b^{b+a} \log q(t) \cdot dt \tag{3}$$

This is the fundamental relationship between the prevalence of past tuberculous infection in a cohort born at time $b$ and observed at age $a$, and the risk of acquiring a primary tuberculous infection between times $b$ and $b+a$.

It should be noted that in formula (3) no assumptions are made about the nature of the relationship between $q$ (or $p$) and time. In particular, $p$ may depend not only on the calendar time, but also on the age of the cohort at that time.

*The estimation of the trend in the risk of tuberculous infection*

As will be shown below, considerable use may be made of formula (3) once we have some information on the way in which the risk of infection, $p$, varies with time, and can express this relationship in an appropriate mathematical form. It is more concise algebraically to continue to work with $q$, that is $(1-p)$, instead of $p$. The most satisfactory way of estimating the value of $q$ at different times is by using a modification of formula (3) (or formula (2)). If there was no variation in the risk of infection between the year of birth and the year of observation, then $q(t)$ would be equal to a constant value $q$ in this formula, and we should have

$$\log Q(a,b) = \log q \cdot [t]_b^{b+a} = a \cdot \log q = \log q^a$$

$$\therefore\ Q(a,b) = q^a \tag{4}$$

Thus, in the situation in which $q$ varies with time, an average value of $q(t) = \bar{q}$ may be obtained by extracting the '$a$'th root of $Q(a,b)$. The simplest way to do this is to use the logarithmic equation, that is to divide $\log Q(a, b)$ by $a$, and take the antilogarithm. If, as is likely, $q(t)$ is increasing (or decreasing) smoothly between time $b$ and time $b+a$, then this average value $\bar{q}$ will represent the value of $q(t)$ at some time $t$ between $b$ and $b+a$; $t$ will at this stage be unknown.

If we have a series of values of $Q(a,b)$ for different cohorts, that is, for different values of $b$, but for the same value of $a$, we may calculate a corresponding series of average values of $q$, and these will be separated by the same time intervals as are the cohorts, although the actual times to which the averages refer will not be known. This series of average values of $q$ will

therefore provide a good indication of the nature of the trend in $q$, and will form the basis for choosing an appropriate mathematical formula to describe it. The importance of using, for this purpose, values of $Q(a,b)$ which all refer to the same age $a$ is that the series of average values of $q$ will as a result all be affected to a similar extent by any association between the risk of infection and age.

*Choice of mathematical relationship to describe the trend of the risk of tuberculous infection in the Netherlands*

As explained in the text of the report (page 13) the data for 11 consecutive annual cohorts of male recruits aged 19½ years in the years 1956 to 1966 in the Netherlands were used in this way, and gave a series of 11 annual average values of $q$. It was noted in the course of these calculations that the 11 annual values of $ln\,(-ln\,q)$ appeared to lie practically along a straight line, which suggested that a straight line relationship between $ln\,(-ln\,q)$ and $t$ might represent an appropriate mathematical model to describe the trend in the risk of infection in the Netherlands.

When any biological measure shows a decrease with time, it is natural also to consider the possibility that the decrease may be exponential. During this period $p$ was clearly a decreasing quantity in the Netherlands. An exponential decrease in $p$ would correspond to a straight-line relationship between $ln\,p$ and $t$.

At first sight these two mathematical models appear to be very different. However, they are practically the same in the present context, because the annual risk of tuberculous infection $p$ is a small quantity.

For $|p| < 1$, we have

$$-ln\,q = -ln\,(1-p) = p + \frac{p^2}{2} + \frac{p^3}{3} + \ldots, \text{ which } \doteqdot p, \text{ for small } p.$$

Even if $p$ is as large as 0.1, corresponding to the very high annual risk of primary tuberculous infection of 10%, the value of $-ln\,q$ is only 0.10536, and for smaller values of $p$ the difference between $p$ and $-ln\,q$ is proportionately less. It therefore does not matter which of these two mathematical models is chosen to describe the trend in risk of infection in the Netherlands. The first of the two was chosen, although it looks mathematically more complex, partly because this made it easier to evaluate the integral in formula (3), and partly because the first relationship appeared to describe the trend in infection risks in the Netherlands before the second World War, when the risks were higher, more closely than the second relationship.

We take

$$ln\,(-ln\,q(t)) = c+st$$

$$\therefore\ -ln\,q(t) = e^{c+st} \tag{5}$$

Substituting in formula (3)

$$ln\,Q(a,b) = -\int_b^{b+a} e^{c+st}\cdot dt$$

$$= -\frac{1}{s}\cdot[e^{c+st}]_b^{b+a}$$

$$= -\frac{1}{s}\cdot e^{c+sb}\cdot(e^{sa}-1)$$

$$= \frac{(e^{sa}-1)\cdot e^{s(b-t)}}{s}\cdot(-e^{c+st})$$

$$= \frac{(e^{sa}-1)\cdot e^{s(b-t)}}{s}\cdot ln\,q(t), \text{ from (5)}$$

$$\therefore\quad ln\,q(t) = \frac{s\cdot ln\,Q(a,b)}{(e^{sa}-1)\cdot e^{s(b-t)}} \tag{6}$$

This formula expresses the mathematical relationship between the value of the risk of tuberculous infection $p$ at any time $t$ and the proportion of individuals, in the cohort born at time $b$, who will be infected by age $a$, provided that the trend in the risk of infection is of the form indicated by equation (5).

For particular values of $t$, we have the following four special forms of equation (6).

(i) $t = b$. This gives the risk of infection at the time of birth of the cohort.

$$ln\,q(b) = \frac{s\cdot ln\,Q(a,b)}{(e^{sa}-1)} \tag{7}$$

(ii) $t = b+a$. This gives the risk of infection at the time when the cohort is observed, namely when the cohort is aged $a$ years.

$$ln\,q(b+a) = \frac{s\cdot ln\,Q(a,b)}{(1-e^{-sa})} \tag{8}$$

(iii) $t = b+x$. This gives the risk of infection at the time when the cohort is aged $x$ years.

$$ln\,q(b+x) = \frac{s\cdot ln\,Q(a,b)}{e^{-sx}(e^{sa}-1)} \tag{9}$$

(iv) $t = b+a-y$. This gives the risk of infection $y$ years before the time when the cohort is observed.

$$ln\ q(b+a-y) = \frac{s \cdot ln\ Q(a,b)}{e^{sy}(1-e^{-sa})} \tag{10}$$

Appendix Table B gives, for various values of $a$ and $s$, the value of the risk of infection at age $a$, from formula (8), and the value of the risk of infection a few years earlier, from formula (10), corresponding to a wide range of values of $P$, the proportion of individuals already infected by age $a$. This table provides the simplest way of estimating $p$, the annual risk of tuberculous infection in a particular year, from information on $P$, the proportion already infected by a certain age. The method of using this table is described fully in Section VIII of the report (page 45).

Formula (9) may also be used to determine the age $x$ at which $q$ takes the average value calculated from formula (4). In formula (4), putting $\bar{q} = q(b+x)$ we have

$$ln\ q(b+x) = \frac{1}{a} \cdot ln\ Q(a,b)$$

and substituting this value in formula (9),

$$\frac{1}{a} \cdot ln\ Q(a,b) = \frac{s \cdot ln\ Q(a,b)}{e^{-sx} \cdot (e^{sa}-1)}$$

$$\therefore\ e^{sx} = \frac{(e^{sa}-1)}{sa}$$

$$x = \frac{1}{s}\ ln\ \frac{(e^{sa}-1)}{sa} \tag{11}$$

Thus formula (4) and formula (11) together provide a method of estimating the risk of tuberculous infection from a prevalence figure, and assigning it to a specific time, which is alternative to the use of Appendix Table B. However the advantage of Appendix Table B is that it gives risks of tuberculous infection which are assigned to particular calendar years, whereas in this alternative method the risk of tuberculous infection is assigned to a time which does not necessarily correspond to a calendar year. Both methods are derived directly from equation (6), and therefore both depend on the trend in the risk of infection being of the form indicated by equation (5).

*Determination of the series of annual infection risks in the Netherlands during and after the second World War*

These mathematical formulae may now be used to estimate the annual risks of tuberculous infection in the Netherlands, and also to study whether they vary with age and sex. One way of doing this would be to calculate separate estimates of (say) $q(b)$ from each observed value of $Q(a,b)$, using formula (7), but this would not make the best use of the close agreement which is apparent between the actual trend in the risk of infection and the mathematical relationship of formula (5).

For this reason the series of 11 annual average values of $q$ for male recruits aged $19\frac{1}{2}$ years was taken as a starting point. A straight line was fitted by the standard technique of linear regression to the 11 estimated values of $ln\,(-ln\,q)$, regarding all 11 values as of equal weight. This gave a smoothed series of values of $\bar{q}$ satisfying an equation of the form

$$-ln\,\bar{q}_b = e^{C+sb} \tag{12}$$

in which $C = 0.70978$ and $s = -0.13794$ ($b$ being measured from 1900, and $\bar{q}_b$ being arbitrarily assigned to time $b$).

In this equation, $\bar{q}_b$ represents the average value of $q$ for the cohort born at time $b$, and is thus equal to a value of $q$ at some time $(b+x)$ between $b$ and $(b+a)$.

$$\therefore\ -ln\,\bar{q}_b = -ln\,q(b+x)$$

We may determine $x$ by using formulae (12) and (9) on the two sides of this equation, giving

$$e^{C+sb} = \frac{-s\,ln\,Q(a,b)}{(e^{sa}-1)\cdot e^{-sx}}$$

$$\therefore\quad e^{sx} = \frac{-e^{C+sb}\,(e^{sa}-1)}{s\,ln\,Q(a,b)} \tag{13}$$

This equation may be used to estimate $x$ for each of the 11 cohorts from the observed values of $Q(a,b)$, $C$ and $s$ taking the values found when determining the regression line (12). These 11 values of $x$ are given in Table 2.

Substituting from formula (7) in (13)

$$e^{sx} = \frac{-e^{C+sb}}{ln\,q(b)}$$

$$\therefore\ -ln\,q(b) = e^{(C-sx)+sb}$$

But

$$-\ln q(b) = e^{c+sb} \text{ from formula (5)}$$
$$\therefore c = C - sx$$

Thus the curve $-\ln \bar{q}_b = e^{C+sb}$ may be moved from the arbitrary position in which $\bar{q}_b$ is assigned to time $b$ to a new position $-\ln q(b) = e^{c+sb}$, where $c = C - sx$ ($x$ being given by equation (13)). In this new position, the curve of infection risks reproduces, by age $a$, the observed value of $Q(a, b)$ for the cohort born at time $b$. The new curve is the same as the old curve, shifted $x$ years along the time-scale.

The average of the values of $x$ for the 11 cohorts was 7.683 years. This may be taken as a single value for the curve which will, on average, most closely reproduce the observed values of $Q(a,b)$ for these 11 cohorts.

$$\therefore c = 0.70978 - (-0.13794) \times 7.683 = 1.7696$$

The final column of Table 2 was therefore determined by taking as a standard curve equation (5), namely

$$-\ln q(b) = e^{c+sb}$$

with the above values of $c$ and $s$, and $b$ = 37, 38 ... 47.

*Variations in the annual risk of infection with sex and age*

The series of annual risks of infection for the years from 1937 to 1947 in Table 2 refers to males only, and is derived from information obtained at an age of 19½ years. If the risk of infection varies with the age of the subject, then this series represents *average* annual risks of infection over this age-range. The extent to which the risk of infection depends on age may therefore be assessed by looking at information for cohorts of males observed at a different age. If the same series of annual risks reproduces the observed prevalences, then the risk of infection would appear not to depend on age. If however, the series has to be shifted in time to reproduce the observed prevalences at a different age, this would indicate that the level ot the average annual risk over the different age-range was higher (or lower) than that at ages up to 19½ years, and this might indicate an association between the risk of infection and age.

Equally, if a series of annual risks which reproduces observed prevalences for males has to be shifted in time to reproduce observed prevalences for females of the same age, this would indicate different levels of the annual risk in the two sexes.

A shift of the curve by $x$ years along the time-scale corresponds to a reduc-

tion of $sx$ in the value of $ln(-ln\, q(t))$, or a proportionate reduction of $sx$ in the value of $-ln\, q(t)$. Because $-ln\, q(t)$ is nearly equal to $p(t)$ we may say that a shift of the curve of infection risks by $x$ years corresponds closely to a proportionate reduction in the risk of infection of $sx$. The proportionate reduction in the risk of infection each year is thus $-s$. For the Netherlands after the second World War the decrease in the risk of infection was therefore about 0.138, or 13.8 percent per year.

Equation (13), with $c$ in place of $C$, and using the above values of $c$ and $s$, was therefore applied to the values of $Q(a,b)$ for schoolboys and schoolgirls in the Netherlands aged $12\frac{1}{2}$ to $18\frac{1}{2}$ years, observed from 1962 to 1966. The values of $x$ now obtained represent the number of years by which the standard curve had to be shifted to reproduce the observed prevalences. These values are shown in Tables 3 and 4.

Looking first at the comparison between males and females, and restricting the comparison to ages $13\frac{1}{2}$ to $17\frac{1}{2}$, for reasons given in the text (page 18), the average shift for males was $-0.343$ years and for females $-0.995$ years. The difference was 0.652 years. This corresponds to a lower level of annual infection risks in females than in males in the Netherlands, the percentage difference in level being about $0.652 \times 0.138 \times 100$, or about 9.0 percent, during the period covered by the cohorts in the comparison, which is from 1945 to 1966.

The assessment of age-variation is less easy. The negative shifts tend to be rather greater for the younger groups (corresponding to a rise in infection risks with age), but neither in males nor in females is this a steady trend. If two regression lines with the same slope are fitted to the values of $x$ for males and females aged $13\frac{1}{2}$ to $17\frac{1}{2}$, the slope corresponds to a decrease of 0.09 in the value of $x$ for each decrease of one year in the age at the time of observation (that is, a decrease of 0.18 in $x$ for a decrease of one year in the *average* of the age-range). According to these regression lines a value of $x$ of $-0.02$ would be expected for males aged $19\frac{1}{2}$ years, which is closely similar to the value of $-0.06$ actually found for the cohorts included in Table 2; this suggests that the small (though non-significant) trend in infection risk with age indicated by the regression lines may be a genuine one. If it is, then the change in $x$ corresponds to a percentage rise in the level of the risk of infection of about $0.18 \times 0.138 \times 100$, or about 2.5 percent, for each year of age during the period covered by the cohorts under study, namely from 1945 to 1966. Partly because the reality of this effect was uncertain, and partly because it was small in comparison with the decrease of 13.8 percent in level of infection risk each calendar year during the same period, the main report is based upon a single series of average annual risks for the age-range 0-$19\frac{1}{2}$ years, without any further adjustment for age.

However, the standard curve was adjusted, by shifting it by $-0.326$ years, to give a series of annual risks of infection which would be appropriate for males and females combined. For this curve $c = 1.7246$, and taking $s = -0.1379$ as before led to the annual risks of tuberculous infection for the years 1940 to 1969 shown in Table 5.

*Determination of the series of annual infection risks in the Netherlands before the second World War*

For reasons explained in the report (pages 22-23) it was decided not to use the information on prevalence under the age of $2\frac{1}{2}$ years from the four earlier surveys of children in Amsterdam aged up to 13 years of age. Instead the infection risks were estimated from comparisons of the prevalences observed at higher ages. This necessitated the use of a modification of formula (6).

If we have two cohorts born at times $b_1$ and $b_2$ and observed at ages $a_1$ and $a_2$, we have, from equation (6)

$$ln\ Q(a_1, b_1) = \frac{e^{s(b_1-t)} \cdot (e^{sa_1}-1)}{s} \cdot ln\ q(t)$$

$$ln\ Q(a_2, b_2) = \frac{e^{s(b_2-t)} \cdot (e^{sa_2}-1)}{s} \cdot ln\ q(t)$$

By subtraction

$$ln\left(\frac{Q(a_1, b_1)}{Q(a_2, b_2)}\right) = \frac{e^{-st} \cdot ln\ q(t)}{s} \cdot \left(e^{sb_1} \cdot (e^{sa_1}-1) - e^{sb_2} \cdot (e^{sa_2}-1)\right) \qquad (14)$$

There are three special forms of this equation corresponding to particular situations.

(i) $a_1 = a_2$, $b_1 \neq b_2$. This is the situation when two cohorts are both observed at the same age $a$.

$$ln\left(\frac{Q(a, b_1)}{Q(a, b_2)}\right) = \frac{e^{-st}\ ln\ q(t)}{s} \cdot (e^{sa}-1)\,(e^{sb_1} - e^{sb_2}) \qquad (15)$$

(ii) $a_1 \neq a_2$, $b_1 = b_2$. This is the situation when one cohort born at time $b$ is observed at two ages.

$$ln\left(\frac{Q(a_1, b)}{Q(a_2, b)}\right) = \frac{e^{s(b-t)}\ ln\ q(t)}{s} \cdot (e^{sa_1} - e^{sa_2})$$

$$= \frac{ln\ q(b)}{s} \cdot (e^{sa_1} - e^{sa_2}) \qquad (16)$$

(iii) $a_1 + b_1 = a_2 + b_2$. This is the situation when two cohorts are both observed at the same time.

$$ln\left(\frac{Q(a_1,b_1)}{Q(a_2,b_2)}\right) = \frac{e^{-st}\,ln\,q(t)}{s}\cdot(e^{sb_2}-e^{sb_1}) \tag{17}$$

Further special forms of any of these four equations may be obtained for particular values of $t$ (as in equations (7) to (10)). They all express the mathematical relationship between the risk of tuberculous infection at time $t$ and *two* measures of the proportion of individuals who have been infected by specified ages, provided that, as with the earlier formulae, the trend in the risk of infection is of the form indicated by equation (5).

In the present instance, use is made of equation (17). Regarding $b_1$ as the earlier birth date, and considering consecutive annual cohorts, we have $b_2 = b_1+1$, $a_1 = a_2+1$. For $t = (b_1+b_2)/2 = b_1+\frac{1}{2}$, equation (17) becomes

$$ln\ \frac{Q(a_1,b_1)}{Q(a_2,b_2)} = ln\,q(b_1+\tfrac{1}{2})\cdot\left(\frac{e^{s/2}-e^{-s/2}}{s}\right)$$

$$= ln\,q(b_1+\tfrac{1}{2})\cdot(1+0(s^2)).$$

Thus to a close approximation, since $s$ is small,

$$q(b_1+\tfrac{1}{2}) = \left(\frac{Q(a_1,b_1)}{Q(a_2,b_2)}\right) \tag{18}$$

Application of formula (18) to the information in each of the four surveys at successive ages from $2\frac{1}{2}$ to $13\frac{1}{2}$ years gave the 44 estimates* of $q$ referred to on page 24 of the report, and the values of $ln\,(-ln\,q)$ again appeared to lie approximately on a straight line. (As mentioned on page 64, the slightly different values of $ln\,p$ were not quite so closely fitted by a straight line). A straight line was fitted by the standard technique of linear regression to the 44 estimated values of $ln\,(-ln\,q)$, regarding all 44 values as of equal weight.

This gave $s = -0.05493$ in an equation of the form

$$-ln\,q = e^{C+sb_1}$$

In this equation $q$ represents the average value of $q(t)$ at some time $(b_1+x)$, that is

$$-ln\,q = -ln\,q(b_1+x)$$

We may determine $x$ by using formulae (12) and (17) on the two sides of this equation.

$$e^{c+sb_1} = \frac{s\,ln\left(\frac{Q(a_1,b_1)}{Q(a_2,b_2)}\right)e^{s(b_1+x)}}{(e^{sb_2}-e^{sb_1})}$$

* These 44 estimates are not mathematically independent.

$$\therefore \quad e^{sx} = \frac{e^{c}(e^{sb_2} - e^{sb_1})}{s\ ln\left(\dfrac{Q(a_1, b_1)}{Q(a_2, b_2)}\right)} \tag{19}$$

Taking $a_2 = 2\frac{1}{2}$, and putting $a_1$ successively equal to $3\frac{1}{2}$, $4\frac{1}{2}$, ... $13\frac{1}{2}$ for each of the four surveys, equation (19) gave 44 values* of $x$. These were averaged, and the average value $\bar{x}$ was used to define the standard position for the curve, namely

$$-ln\ q(b_1) = e^{c+sb_1}$$

where $c = C - s\bar{x} = -1.5435$, and $s = -0.05493$ as before.

This equation led to the annual risks of tuberculous infection from 1910 to 1939 shown in Table 5. This curve, and the curve for the years from 1940 onwards, intersect at time $T = 39.37$ (measured from 1900).

*Validity of the estimates of annual risk of tuberculous infection*

Finally the general validity of the complete series of annual risks of tuberculous infection was checked by seeing whether they reproduced satisfactorily the prevalence figures at different ages in each of the above surveys.

The complete series of annual risks consists of two parts

$$-ln\ q(t) = e^{c_1+s_1t} \text{ for } t \leq T$$

$$-ln\ q(t) = e^{c_2+s_2t} \text{ for } t > T$$

For early cohorts, for which $b+a < T$, we have

$$-ln\ Q(a, b) = \frac{e^{c_1+s_1b}(e^{s_1a}-1)}{s_1} \tag{20}$$

For the later cohorts for which $b \leq T \leq (b+a)$ the expected prevalence figure has to be calculated from a modification of the basic integration, namely

$$-ln\ Q(a, b) = \int_b^T e^{c_1+s_1t} \cdot dt + \int_T^{b+a} e^{c_2+s_2t} \cdot dt$$

$$= \frac{e^{c_1} \cdot (e^{s_1T} - e^{s_1b})}{s_1} + \frac{e^{c_2} \cdot (e^{s_2(b+a)} - e^{s_2T})}{s_2} \tag{21}$$

For the later cohorts for which $b > T$

$$-ln\ Q(a, b) = \frac{e^{c_2+s_2b}(e^{s_2a}-1)}{s_2} \tag{22}$$

* These 44 values are not mathematically independent.

For the cohorts contributing to the four earliest surveys, the expected values of $ln\ Q(a_1,b_1)$ for $a_1 = 3.5, 4.5 \ldots 13.5$ were calculated on the assumption that $ln\ Q(a_2,b_2)$ took the value observed at the same survey for $a_2 = 2.5$, and using the difference between the appropriate pair of equations for $ln\ Q(a_1,b_1)$ and $ln\ Q(a_2,b_2)$ selected from (20), (21) and (22), depending on the values of $a$ and $b$.

The calculations were made with the following values for $c$ and $s$:

| | $c_1$ | $s_1$ | $c_2$ | $s_2$ |
|---|---|---|---|---|
| Both sexes (Tables 6 and 7) | −1.5435 | −0.05493 | 1.7246 | −0.13794 |
| Males only (Table 8) | −1.5256 | −0.05493 | 1.7696 | −0.13794 |

The value of $c_2$ for males is that obtained originally for Table 2, and equals $1.7246 - 0.3260 \times (-0.13794)$. The value of $c_1$ for males was therefore made equal to $-1.5435 - 0.3260 \times (-0.05493)$, on the assumption that there would have been a similar contrast between the risks of infection for males and females before the second World War as was found subsequently.

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## SUMMARY

A detailed study has been made of the extensive data on the prevalence of tuberculous infection in the Netherlands at different ages during the past 40 years. It was possible to convert this information on prevalence into a series of annual risks of tuberculous infection during the period since 1910, which reproduced the observed prevalence data satisfactorily, and which could then be used to make a comprehensive study of the prevalence of tuberculous infection and the incidence of fresh primary infections for cohorts born between 1910 and 1960 up to the age of 50 years. The Netherlands is a particularly suitable area in which to make a study of this type, because only a small proportion of the child population has been BCG vaccinated, and mycobacterial infections other than tuberculosis are not frequent.

Representative surveys were made in male army recruits aged about 19 years from 1956 to 1966, and in schoolboys and schoolgirls aged from about 12 to 18 years from 1962 to 1966. In all these surveys the standard WHO tuberculin test was used. For the purposes of this study, a reaction of 8 mm induration or more at 72 hours to 1 TU of RT 23 (in a buffer containing Tween 80) was regarded as indicating past infection with tubercle bacilli.

With the aid of the mathematical relationship between the annual risks of tuberculous infection and the resulting prevalence of past infection, it was found that since about 1940 the risk of tuberculous infection in the Netherlands closely followed an exponential downward trend, the risk decreasing annually by 13.8 percent. The estimated annual risk of tuberculous infection was 2.08 percent in 1940 and 0.058 percent in 1966.

A comparison of the risks of tuberculous infection in the two sexes showed that the annual risk was about 9 percent greater for boys than for girls in each calendar year. There was no definite association between the annual risk of tuberculous infection and age, up to the age of 20 years, but the figures were consistent with the possibility that there might be a small increase in the risk of tuberculous infection with increasing age.

Four further tuberculin surveys were made in Amsterdam in children aged up to 14 years in the years 1926, 1934, 1939 and 1947, using the von Pirquet

test. It was uncertain whether the unduly large prevalence figures during the first two years of life were due to shortcomings of the testing technique or to high risks of infection in the youngest children, and the risk of tuberculous infection was therefore determined from the prevalence data at higher ages. The risk of tuberculous infection in the Netherlands from about 1913 to 1939 also appeared to follow closely an exponential downward trend, the risk decreasing annually by 5.5 percent. The estimated annual risk of tuberculous infection was 9.68 percent in 1913 and 2.41 percent in 1939. The more gradual decrease in the annual risk of tuberculous infection before 1940 is probably related to the high and unchanging risk of bovine tuberculous infection in the Netherlands during this period. Pasteurisation of milk was made compulsory in 1940.

These two series of estimated annual risks of tuberculous infection in the Netherlands were combined, and their validity was checked by confirming that (with the necessary adjustments for sex) they reproduced satisfactorily the prevalence figures obtained in all the surveys referred to above. Moreover, a possible alternative series of infection risks was studied for the years of the second World War, corresponding to an interruption in the steady decline of infection risk, but this did not reproduce the later prevalence figures satisfactorily. The combined series of annual infection risks thus provides an acceptable summary of the way in which tuberculosis has been changing in the Netherlands during a period of more than 50 years. It is of considerable interest that such a simple model should have reproduced so satisfactorily the findings for such a large number of separate generations (or cohorts) of children examined at different ages.

The series of annual infection risks was extended forwards in time by allowing the decrease of 13.8 percent each year to continue until 1980, the risk thereafter being regarded as constant. The consequences of this series of infection risks, both in the past and for the future, have been studied in terms both of the prevalence of tuberculous infection and the incidence of fresh primary infections, by applying them to the cohorts born in each of the years 1910 to 1960, up to an age of 50 years. Three different assumptions were investigated concerning the association of the risk of tuberculous infection and age:

(a) that there was no association;

(b) that the risk of infection increased gradually during adolescence to a level at age 18 which was 50 percent above that at age 13, and then decreased again between age 20 and 25 to the original level, which was maintained until age 50;

(c) that the risk showed a similar increase and decrease, but with the decrease occurring only between age 25 and 30.

However, there were only small differences in the consequences of the three assumptions for the more recent cohorts, and these were not of practical importance. Further analyses were therefore made only on the first assumption, that the risk of tuberculous infection in a particular calendar year did not depend on age.

For each of the cohorts born between 1910 and 1960, the prevalence of tuberculous infection rose very steeply during childhood, less steeply during adolescence and very little above the age of 25 years. This pattern was very similar for each cohort despite the great change in level of the prevalence during the 50-year period; for the cohort born in 1910, the prevalence of tuberculous infection at age 4 was 35.8 percent, but for the cohort born in 1960 the prevalence at the same age was only 3.4 percent. Of all the infections which occurred in each cohort up to the age of 50 years, about 40 percent had occurred by the age of 4 years, and about 80 percent had occurred by the age of 14 years.

The incidence of fresh primary infections under the age of 15 years decreased steeply from cohort to cohort during the 50 years. The incidence at age 9 decreased from 2,940 per 100,000 for the cohort of 1910 to 39 for the cohort of 1960. At ages 15 to 40, the incidence remained at a high level until about 1935, and has since decreased steeply. At ages above 40 the incidence of fresh primary infections was relatively low for the early cohorts (because few individuals survived uninfected to these ages) and has remained low for the later cohorts (because, although a larger proportion now remains susceptible, these individuals will encounter very much lower risks of infection in the future).

On the assumption that in other territories any decrease in the annual risk of tuberculous infection will also be exponential, and that the risk will also be largely independent of age, detailed tables are provided for converting prevalence information obtained from tuberculin surveys to annual risks of tuberculous infection in particular calendar years. To use these tables it is necessary also to have an estimate of the percentage decrease each year in the risk of infection. Such an estimate may readily be obtained if more than one tuberculin survey has been undertaken in the country, or if different ages have been covered, and methods for doing this are given.

In circumstances where no representative tuberculin survey has been made in a country, another method would be to estimate the risk of infection from the mortality of tuberculous meningitis in children aged under 5 years in the absence of chemotherapy. In the Netherlands (where both human and bovine infections occurred) the ratio of this mortality from tuberculous meningitis to the risk of tuberculous infection was about 1 percent.

The methods of the present paper permit a unified presentation of the

results of representative tuberculin surveys in a readily understandable form. They give a direct indication of the magnitude of the tuberculosis problem in a country at particular points of time, and this facilitates comparisons with other countries.

In considering the reasons for the steady decrease in the risk of tuberculous infection in the Netherlands up to 1940, chemotherapy, mass BCG vaccination and mass radiography were not available, or were not applied, and so can have contributed nothing. Nor does there appear to have been any decrease in bovine tuberculosis infection prior to 1940. The decrease appears to have resulted from an environmental situation in which tuberculosis was tending to eliminate itself, by virtue of the fact that each active case of tuberculosis must eventually have led to the development of less than one such case. The more rapid decrease since 1940 seems to have been largely attributable to the immediate decline in bovine tuberculosis as a result of the pasteurization of milk in 1940.

This study has illustrated the practical advantages of assessing the level and the trend in the annual risk of tuberculous infection by means of current representative tuberculin surveys and the use of such similar data as are already available from the past. With this information it is possible to derive a comprehensive indication both of the prevalence of tuberculous infection, and the incidence of new primary infections at different ages during the following few years. Such information should be of value in planning tuberculosis control programmes in developing countries and eradication programmes in developed countries. It is hoped in a later report to carry the analysis a stage further and to establish the links between the acquisition of tuberculous infection and the risks of a subsequent breakdown to clinical tuberculosis. Information on this point would greatly enhance the practical value of determining the level and the trend in the annual risk of tuberculous infection.

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ESTIMATED PREVALENCE OF TUBERCULOUS INFECTION per 100,000 up to the age of 50 years for cohorts born from 1910 to 1919 APPENDIX TABLE A
ESTIMATED INCIDENCE OF NEW TUBERCULOUS INFECTION (The Netherlands)

ESTIMATION DE LA PREVALENCE DE L'INFECTION TUBERCULEUSE pour 100,000 sujets, jusqu'à l'age de 50 ans, appartenant aux cohortes
ESTIMATION DE L'INCIDENCE DE LA PRIMO-INFECTION TUBERCULEUSE nées de 1910 à 1919 (Pays-Bas)

| YEAR | 0 / 25 | 1 / 26 | 2 / 27 | 3 / 28 | 4 / 29 | 5 / 30 | 6 / 31 | 7 / 32 | 8 / 33 | 9 / 34 | 10 / 35 | 11 / 36 | 12 / 37 | 13 / 38 | 14 / 39 | 15 / 40 | 16 / 41 | 17 / 42 | 18 / 43 | 19 / 44 | 20 / 45 | 21 / 46 | 22 / 47 | 23 / 48 | 24 / 49 | 50' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910. | | 11310 | 20835 | 28910 | 35790 | 41688 | 46770 | 51172 | 55003 | 58352 | 61292 | 63884 | 66177 | 68213 | 70027 | 71649 | 73103 | 74411 | 75590 | 76656 | 77622 | 78500 | 79299 | 80027 | 80694 | |
| | 81304 | 81864 | 82378 | 82852 | 83288 | 83691 | 84031 | 84321 | 84570 | 84783 | 84967 | 85125 | 85261 | 85379 | 85481 | 85569 | 85645 | 85711 | 85769 | 85819 | 85862 | 85900 | 85932 | 85961 | 85985 | 86007 |
| | 11310 | 9525 | 8075 | 6880 | 5898 | 5082 | 4402 | 3831 | 3349 | 2940 | 2591 | 2293 | 2036 | 1814 | 1622 | 1454 | 1308 | 1179 | 1066 | 966 | 878 | 799 | 729 | 666 | 610 | |
| | 560 | 514 | 473 | 436 | 403 | 340 | 290 | 249 | 213 | 184 | 158 | 136 | 118 | 102 | 88 | 76 | 66 | 57 | 50 | 43 | 38 | 33 | 28 | 25 | 21 | |
| 1911. | | 10740 | 19845 | 27602 | 34252 | 39982 | 44946 | 49265 | 53041 | 56356 | 59278 | 61863 | 64159 | 66205 | 68033 | 69673 | 71147 | 72477 | 73679 | 74768 | 75758 | 76659 | 77480 | 78232 | 78920 | |
| | 79551 | 80131 | 80665 | 81157 | 81611 | 81995 | 82322 | 82602 | 82843 | 83050 | 83228 | 83382 | 83515 | 83629 | 83729 | 83815 | 83889 | 83954 | 84010 | 84059 | 84101 | 84138 | 84170 | 84198 | 84222 | 84243 |
| | 10740 | 9105 | 7757 | 6650 | 5731 | 4963 | 4320 | 3776 | 3315 | 2922 | 2585 | 2296 | 2045 | 1829 | 1640 | 1475 | 1330 | 1202 | 1089 | 990 | 901 | 822 | 751 | 688 | 631 | |
| | 580 | 534 | 492 | 454 | 383 | 327 | 280 | 241 | 207 | 178 | 154 | 133 | 115 | 99 | 86 | 75 | 65 | 56 | 49 | 42 | 37 | 32 | 28 | 24 | 21 | |
| 1912. | | 10200 | 18891 | 26341 | 32761 | 38322 | 43161 | 47391 | 51104 | 54378 | 57275 | 59847 | 62138 | 64187 | 66024 | 67676 | 69165 | 70512 | 71732 | 72841 | 73850 | 74771 | 75613 | 76383 | 77090 | |
| | 77740 | 78338 | 78890 | 79399 | 79828 | 80195 | 80509 | 80779 | 81010 | 81210 | 81382 | 81531 | 81660 | 81771 | 81867 | 81951 | 82023 | 82086 | 82141 | 82188 | 82230 | 82266 | 82297 | 82324 | 82348 | 82368 |
| | 10200 | 8691 | 7450 | 6420 | 5561 | 4839 | 4230 | 3714 | 3274 | 2897 | 2572 | 2292 | 2049 | 1837 | 1652 | 1490 | 1347 | 1221 | 1109 | 1009 | 921 | 842 | 771 | 707 | 650 | |
| | 598 | 551 | 509 | 430 | 367 | 314 | 270 | 232 | 200 | 172 | 149 | 129 | 111 | 96 | 84 | 73 | 63 | 55 | 48 | 41 | 36 | 31 | 27 | 24 | 20 | |
| 1913. | | 9678 | 17974 | 25123 | 31316 | 36705 | 41415 | 45551 | 49196 | 52422 | 55286 | 57838 | 60119 | 62165 | 64004 | 65663 | 67162 | 68521 | 69756 | 70880 | 71905 | 72842 | 73701 | 74488 | 75212 | |
| | 75878 | 76492 | 77059 | 77537 | 77945 | 78295 | 78595 | 78853 | 79076 | 79268 | 79433 | 79576 | 79700 | 79808 | 79901 | 79982 | 80052 | 80112 | 80165 | 80211 | 80251 | 80286 | 80316 | 80342 | 80365 | 80385 |
| | 9678 | 8296 | 7149 | 6192 | 5389 | 4710 | 4136 | 3645 | 3226 | 2864 | 2552 | 2281 | 2045 | 1840 | 1659 | 1500 | 1359 | 1235 | 1124 | 1025 | 937 | 858 | 787 | 724 | 666 | |
| | 614 | 567 | 478 | 408 | 350 | 300 | 258 | 222 | 192 | 166 | 145 | 124 | 107 | 93 | 81 | 70 | 61 | 53 | 46 | 40 | 35 | 30 | 26 | 23 | 20 | |
| 1914. | | 9185 | 17100 | 23956 | 29923 | 35138 | 39716 | 43752 | 47324 | 50495 | 53320 | 55846 | 58110 | 60147 | 61984 | 63644 | 65149 | 66515 | 67760 | 68895 | 69933 | 70883 | 71755 | 72556 | 73293 | |
| | 73973 | 74600 | 75130 | 75582 | 75969 | 76302 | 76588 | 76834 | 77046 | 77229 | 77388 | 77525 | 77644 | 77747 | 77837 | 77914 | 77982 | 78040 | 78091 | 78135 | 78174 | 78207 | 78236 | 78261 | 78283 | 78302 |
| | 9185 | 7915 | 6856 | 5966 | 5215 | 4579 | 4036 | 3571 | 3171 | 2825 | 2526 | 2265 | 2037 | 1836 | 1660 | 1505 | 1367 | 1244 | 1135 | 1038 | 950 | 872 | 801 | 737 | 680 | |
| | 628 | 530 | 452 | 387 | 332 | 286 | 246 | 212 | 183 | 158 | 137 | 119 | 103 | 89 | 78 | 67 | 59 | 51 | 44 | 38 | 33 | 29 | 25 | 22 | 19 | |
| 1915. | | 8716 | 16265 | 22835 | 28578 | 33619 | 38064 | 41996 | 45488 | 48599 | 51380 | 53874 | 56116 | 58139 | 59967 | 61624 | 63129 | 64499 | 65749 | 66892 | 67938 | 68898 | 69780 | 70592 | 71341 | |
| | 72031 | 72615 | 73112 | 73539 | 73905 | 74220 | 74491 | 74724 | 74926 | 75101 | 75252 | 75383 | 75496 | 75595 | 75680 | 75755 | 75819 | 75875 | 75924 | 75966 | 76003 | 76035 | 76063 | 76087 | 76108 | 76126 |
| | 8716 | 7549 | 6570 | 5743 | 5042 | 4444 | 3932 | 3492 | 3111 | 2781 | 2494 | 2243 | 2022 | 1828 | 1657 | 1505 | 1370 | 1250 | 1143 | 1047 | 960 | 882 | 812 | 748 | 691 | |
| | 583 | 498 | 426 | 365 | 315 | 271 | 234 | 202 | 175 | 151 | 131 | 113 | 99 | 85 | 74 | 64 | 56 | 49 | 42 | 37 | 32 | 28 | 24 | 21 | 18 | |
| 1916. | | 8270 | 15467 | 21758 | 27291 | 32150 | 36458 | 40283 | 43691 | 46738 | 49470 | 51926 | 54142 | 56144 | 57959 | 59608 | 61109 | 62479 | 63730 | 64877 | 65928 | 66895 | 67784 | 68604 | 69351 | |
| | 70000 | 70545 | 71012 | 71413 | 71758 | 72055 | 72311 | 72532 | 72724 | 72889 | 73032 | 73157 | 73265 | 73358 | 73440 | 73510 | 73572 | 73625 | 73671 | 73712 | 73747 | 73777 | 73804 | 73827 | 73847 | 73864 |
| | 8270 | 7197 | 6291 | 5523 | 4869 | 4308 | 3825 | 3408 | 3047 | 2732 | 2457 | 2215 | 2003 | 1815 | 1649 | 1501 | 1369 | 1252 | 1146 | 1052 | 966 | 890 | 820 | 757 | 639 | |
| | 545 | 467 | 401 | 345 | 297 | 256 | 221 | 191 | 166 | 143 | 124 | 108 | 94 | 81 | 71 | 61 | 53 | 46 | 40 | 35 | 30 | 26 | 23 | 20 | 18 | |
| 1917. | | 7846 | 14704 | 20725 | 26033 | 30729 | 34899 | 38614 | 41936 | 44914 | 47592 | 50007 | 52190 | 54169 | 55967 | 57603 | 59096 | 60460 | 61710 | 62857 | 63910 | 64880 | 65773 | 66599 | 67295 | |
| | 67890 | 68399 | 68836 | 69212 | 69535 | 69815 | 70056 | 70264 | 70445 | 70601 | 70737 | 70854 | 70955 | 71045 | 71122 | 71189 | 71247 | 71298 | 71342 | 71380 | 71413 | 71442 | 71467 | 71489 | 71508 | 71525 |
| | 7846 | 6858 | 6021 | 5307 | 4695 | 4170 | 3715 | 3322 | 2978 | 2678 | 2415 | 2183 | 1979 | 1797 | 1636 | 1493 | 1365 | 1250 | 1146 | 1053 | 970 | 894 | 825 | 696 | 595 | |
| | 509 | 437 | 376 | 324 | 279 | 241 | 208 | 180 | 156 | 136 | 118 | 102 | 89 | 77 | 67 | 58 | 51 | 44 | 38 | 33 | 29 | 25 | 22 | 19 | 17 | |
| 1918. | | 7442 | 13976 | 19735 | 24831 | 29356 | 33388 | 36992 | 40224 | 43130 | 45751 | 48120 | 50267 | 52218 | 53993 | 55613 | 57094 | 58450 | 59694 | 60837 | 61890 | 62859 | 63755 | 64511 | 65156 | |
| | 65708 | 66183 | 66591 | 66942 | 67245 | 67507 | 67733 | 67929 | 68098 | 68245 | 68373 | 68484 | 68580 | 68663 | 68736 | 68799 | 68854 | 68902 | 68943 | 68979 | 69010 | 69038 | 69062 | 69082 | 69100 | 69116 |
| | 7442 | 6534 | 5759 | 5096 | 4525 | 4032 | 3604 | 3232 | 2906 | 2621 | 2369 | 2147 | 1951 | 1776 | 1620 | 1481 | 1356 | 1244 | 1143 | 1052 | 970 | 895 | 756 | 645 | 553 | |
| | 474 | 408 | 351 | 303 | 262 | 226 | 196 | 170 | 147. | 128 | 111 | 96 | 84 | 73 | 63 | 55 | 48 | 41 | 36 | 31 | 27 | 24 | 21 | 18 | 15 | |
| 1919. | | 7059 | 13281 | 18787 | 23676 | 28032 | 31926 | 35418 | 38558 | 41389 | 43948 | 46268 | 48376 | 50294 | 52044 | 53644 | 55109 | 56453 | 57688 | 58825 | 59873 | 60841 | 61657 | 62354 | 62951 | |
| | 63464 | 63904 | 64284 | 64611 | 64894 | 65138 | 65350 | 65533 | 65692 | 65830 | 65950 | 66053 | 66144 | 66222 | 66291 | 66350 | 66401 | 66446 | 66485 | 66519 | 66548 | 66574 | 66596 | 66615 | 66632 | 66647 |
| | 7059 | 6222 | 5506 | 4889 | 4356 | 3894 | 3492 | 3140 | 2831 | 2560 | 2320 | 2107 | 1918 | 1750 | 1600 | 1465 | 1344 | 1235 | 1137 | 1048 | 967 | 816 | 597 | 527 | 512 | |
| | 441 | 379 | 328 | 283 | 244 | 212 | 183 | 159 | 138 | 120 | 104 | 90 | 79 | 68 | 59 | 51 | 45 | 39 | 34 | 29 | 26 | 22 | 19 | 17 | 15 | |

ESTIMATED PREVALENCE OF TUBERCULOUS INFECTION per 100,000 up to the age of 50 years for cohorts born from 1920 to 1929 APPENDIX TABLE A
ESTIMATED INCIDENCE OF NEW TUBERCULOUS INFECTION (The Netherlands)

ESTIMATION DE LA PREVALENCE DE L'INFECTION TUBERCULEUSE pour 100,000 sujets, jusqu'à l'âge de 50 ans, appartenant aux cohortes
ESTIMATION DE L'INCIDENCE DE LA PRIMO-INFECTION TUBERCULEUSE nées de 1920 à 1929 (Pays-Bas)

| YEAR | 0<br>25 | 1<br>26 | 2<br>27 | 3<br>28 | 4<br>29 | 5<br>30 | 6<br>31 | 7<br>32 | 8<br>33 | 9<br>34 | 10<br>35 | 11<br>36 | 12<br>37 | 13<br>38 | 14<br>39 | 15<br>40 | 16<br>41 | 17<br>42 | 18<br>43 | 19<br>44 | 20<br>45 | 21<br>46 | 22<br>47 | 23<br>48 | 24<br>49 | 50' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1920. | | 6695 | 12619 | 17879 | 22566 | 26756 | 30513 | 33891 | 36037 | 39691 | 42187 | 44455 | 46519 | 48402 | 50123 | 51700 | 53146 | 54475 | 55698 | 56826 | 57866 | 58745 | 59495 | 60137 | 60689 | |
| | 61163 | 61571 | 61923 | 62228 | 62490 | 62718 | 62915 | 63086 | 63235 | 63363 | 63475 | 63572 | 63657 | 63730 | 63794 | 63849 | 63898 | 63939 | 63976 | 64008 | 64035 | 64059 | 64080 | 64098 | 64114 | 64128 |
| | 6695 | 5924 | 5260 | 4637 | 4190 | 3757 | 3378 | 3046 | 2754 | 2496 | 2267 | 2064 | 1883 | 1721 | 1577 | 1446 | 1329 | 1223 | 1127 | 1041 | 878 | 750 | 642 | 551 | 474 | |
| | 408 | 352 | 304 | 263 | 228 | 197 | 171 | 148 | 129 | 112 | 97 | 85 | 73 | 64 | 55 | 48 | 42 | 36 | 32 | 28 | 24 | 21 | 18 | 16 | 14 | |
| 1921. | | 6349 | 11987 | 17010 | 21500 | 25527 | 29147 | 32412 | 35364 | 38039 | 40469 | 42681 | 44700 | 46544 | 48234 | 49784 | 51208 | 52519 | 53728 | 54843 | 55785 | 56589 | 57277 | 57868 | 58376 | |
| | 58814 | 59191 | 59517 | 59799 | 60043 | 60254 | 60438 | 60597 | 60735 | 60854 | 60958 | 61049 | 61128 | 61196 | 61256 | 61307 | 61352 | 61391 | 61425 | 61455 | 61480 | 61503 | 61522 | 61539 | 61554 | 61567 |
| | 6349 | 5638 | 5023 | 4491 | 4026 | 3621 | 3265 | 2952 | 2675 | 2430 | 2212 | 2018 | 1845 | 1690 | 1550 | 1424 | 1311 | 1208 | 1116 | 942 | 804 | 689 | 591 | 508 | 437 | |
| | 378 | 326 | 282 | 244 | 211 | 183 | 159 | 138 | 120 | 104 | 91 | 79 | 68 | 59 | 52 | 45 | 39 | 34 | 30 | 26 | 22 | 19 | 17 | 15 | 13 | |
| 1922. | | 6020 | 11383 | 16178 | 20478 | 24344 | 27830 | 30982 | 33839 | 36433 | 38796 | 40951 | 42920 | 44725 | 46380 | 47900 | 49300 | 50591 | 51782 | 52787 | 53646 | 54381 | 55012 | 55554 | 56021 | |
| | 56425 | 56773 | 57074 | 57334 | 57560 | 57756 | 57925 | 58073 | 58200 | 58312 | 58408 | 58492 | 58565 | 58629 | 58684 | 58732 | 58773 | 58810 | 58841 | 58669 | 58893 | 58913 | 58932 | 58948 | 58962 | 58973 |
| | 6020 | 5363 | 4795 | 4299 | 3866 | 3486 | 3152 | 2857 | 2595 | 2362 | 2155 | 1970 | 1804 | 1655 | 1521 | 1400 | 1290 | 1191 | 1005 | 858 | 735 | 631 | 543 | 467 | 403 | |
| | 348 | 301 | 261 | 226 | 196 | 170 | 147 | 128 | 111 | 97 | 84 | 73 | 63 | 55 | 48 | 42 | 36 | 32 | 28 | 24 | 21 | 18 | 16 | 14 | 12 | |
| 1923. | | 5707 | 10809 | 15384 | 19498 | 23207 | 26561 | 29601 | 32362 | 34875 | 37168 | 39264 | 41184 | 42945 | 44563 | 46053 | 47425 | 48693 | 49763 | 50676 | 51459 | 52130 | 52707 | 53204 | 53633 | |
| | 54004 | 54324 | 54601 | 54841 | 55050 | 55230 | 55387 | 55523 | 55641 | 55744 | 55834 | 55911 | 55979 | 56037 | 56088 | 56133 | 56171 | 56205 | 56234 | 56260 | 56282 | 56301 | 56318 | 56333 | 56345 | 56357 |
| | 5707 | 5102 | 4575 | 4114 | 3710 | 3354 | 3040 | 2761 | 2513 | 2293 | 2096 | 1920 | 1761 | 1618 | 1490 | 1373 | 1268 | 1070 | 913 | 782 | 671 | 577 | 497 | 429 | 370 | |
| | 320 | 277 | 240 | 208 | 181 | 157 | 136 | 118 | 103 | 89 | 78 | 67 | 59 | 51 | 44 | 39 | 34 | 29 | 25 | 22 | 19 | 17 | 15 | 13 | 11 | |
| 1924. | | 5411 | 10262 | 14626 | 18560 | 22116 | 25340 | 28258 | 30933 | 33365 | 35588 | 37624 | 39492 | 41208 | 42788 | 44244 | 45588 | 46722 | 47691 | 48521 | 49233 | 49845 | 50372 | 50827 | 51220 | |
| | 51559 | 51853 | 52108 | 52329 | 52521 | 52687 | 52831 | 52957 | 53066 | 53160 | 53243 | 53314 | 53377 | 53431 | 53478 | 53519 | 53554 | 53585 | 53612 | 53636 | 53656 | 53674 | 53690 | 53703 | 53715 | 53725 |
| | 5411 | 4851 | 4363 | 3934 | 3557 | 3224 | 2928 | 2666 | 2432 | 2223 | 2036 | 1868 | 1716 | 1580 | 1456 | 1344 | 1134 | 969 | 830 | 712 | 612 | 527 | 455 | 393 | 340 | |
| | 294 | 255 | 221 | 192 | 166 | 144 | 125 | 109 | 95 | 82 | 72 | 62 | 54 | 47 | 41 | 36 | 31 | 27 | 23 | 20 | 18 | 16 | 13 | 12 | 10 | |
| 1925. | | 5129 | 9742 | 13901 | 17661 | 21063 | 24164 | 26982 | 29553 | 31903 | 34056 | 36030 | 37845 | 39515 | 41054 | 42475 | 43675 | 44699 | 45576 | 46328 | 46976 | 47533 | 48014 | 48429 | 48788 | |
| | 49099 | 49368 | 49602 | 49804 | 49980 | 50133 | 50263 | 50381 | 50481 | 50568 | 50644 | 50709 | 50757 | 50816 | 50860 | 50897 | 50930 | 50959 | 50983 | 51005 | 51024 | 51041 | 51055 | 51068 | 51078 | 51088 |
| | 5129 | 4613 | 4153 | 3760 | 3402 | 3036 | 2818 | 2571 | 2350 | 2153 | 1974 | 1814 | 1670 | 1539 | 1421 | 1199 | 1024 | 877 | 753 | 647 | 557 | 481 | 415 | 359 | 311 | |
| | 269 | 233 | 203 | 176 | 153 | 133 | 115 | 100 | 87 | 76 | 66 | 57 | 50 | 43 | 38 | 33 | 28 | 25 | 22 | 19 | 17 | 14 | 13 | 11 | 9 | |
| 1926. | | 4862 | 9246 | 13209 | 16801 | 20065 | 23033 | 25745 | 28222 | 30491 | 32572 | 34434 | 36245 | 37867 | 39365 | 40629 | 41709 | 42633 | 43427 | 44109 | 44696 | 45204 | 45641 | 46020 | 46347 | |
| | 46631 | 46877 | 47091 | 47276 | 47437 | 47577 | 47698 | 47804 | 47896 | 47975 | 48045 | 48105 | 48157 | 48203 | 48243 | 48277 | 48307 | 48333 | 48356 | 48376 | 48394 | 48409 | 48422 | 48433 | 48443 | 48452 |
| | 4862 | 4384 | 3963 | 3592 | 3263 | 2970 | 2719 | 2477 | 2269 | 2081 | 1912 | 1760 | 1623 | 1498 | 1264 | 1079 | 924 | 793 | 682 | 587 | 507 | 438 | 378 | 328 | 284 | |
| | 246 | 214 | 185 | 161 | 140 | 122 | 106 | 92 | 80 | 69 | 60 | 52 | 46 | 40 | 35 | 30 | 26 | 23 | 20 | 18 | 15 | 13 | 11 | 10 | 9 | |
| 1927. | | 4608 | 8774 | 12550 | 15979 | 19102 | 21950 | 24554 | 26939 | 29126 | 31136 | 32986 | 34692 | 36267 | 37595 | 38730 | 39702 | 40536 | 41253 | 41870 | 42403 | 42863 | 43261 | 43605 | 43904 | |
| | 44162 | 44387 | 44582 | 44751 | 44897 | 45025 | 45136 | 45233 | 45317 | 45389 | 45453 | 45508 | 45556 | 45598 | 45634 | 45666 | 45693 | 45717 | 45738 | 45756 | 45772 | 45786 | 45798 | 45808 | 45818 | 45826 |
| | 4608 | 4166 | 3776 | 3430 | 3122 | 2848 | 2604 | 2385 | 2187 | 2010 | 1850 | 1705 | 1575 | 1329 | 1135 | 972 | 834 | 717 | 617 | 533 | 460 | 398 | 344 | 298 | 259 | |
| | 224 | 195 | 169 | 147 | 128 | 111 | 97 | 84 | 73 | 63 | 55 | 48 | 42 | 36 | 32 | 27 | 24 | 21 | 18 | 16 | 14 | 12 | 10 | 9 | 8 | |
| 1928. | | 4367 | 8325 | 11921 | 15194 | 18180 | 20909 | 23409 | 25702 | 27810 | 29749 | 31537 | 33188 | 34581 | 35770 | 36789 | 37663 | 38415 | 39062 | 39621 | 40103 | 40520 | 40881 | 41194 | 41465 | |
| | 41700 | 41904 | 42082 | 42236 | 42370 | 42486 | 42587 | 42675 | 42751 | 42818 | 42876 | 42926 | 42970 | 43008 | 43041 | 43070 | 43095 | 43117 | 43136 | 43153 | 43167 | 43180 | 43191 | 43200 | 43209 | 43216 |
| | 4367 | 3958 | 3595 | 3273 | 2986 | 2730 | 2500 | 2293 | 2107 | 1940 | 1788 | 1651 | 1393 | 1189 | 1019 | 874 | 752 | 647 | 559 | 482 | 417 | 361 | 313 | 271 | 235 | |
| | 204 | 177 | 154 | 134 | 116 | 101 | 88 | 76 | 66 | 58 | 50 | 44 | 38 | 33 | 28 | 25 | 22 | 19 | 16 | 15 | 13 | 11 | 10 | 9 | 7 | |
| 1929. | | 4139 | 7899 | 11321 | 14444 | 17298 | 19912 | 22310 | 24513 | 26541 | 28411 | 30137 | 31594 | 32837 | 33902 | 34817 | 35603 | 36279 | 36864 | 37368 | 37804 | 38182 | 38509 | 38792 | 39058 | |
| | 39252 | 39437 | 39598 | 39738 | 39860 | 39966 | 40058 | 40137 | 40207 | 40267 | 40320 | 40366 | 40406 | 40440 | 40470 | 40495 | 40519 | 40540 | 40557 | 40572 | 40585 | 40597 | 40607 | 40616 | 40623 | 40630 |
| | 4139 | 3760 | 3422 | 3122 | 2854 | 2614 | 2398 | 2203 | 2023 | 1870 | 1726 | 1457 | 1244 | 1065 | 914 | 786 | 677 | 584 | 504 | 436 | 378 | 327 | 283 | 246 | 213 | |
| | 185 | 161 | 140 | 122 | 106 | 92 | 80 | 69 | 60 | 53 | 46 | 40 | 35 | 30 | 26 | 23 | 20 | 17 | 15 | 13 | 11 | 10 | 9 | 8 | 7 | |

LIBRARY

ESTIMATED PREVALENCE OF TUBERCULOUS INFECTION per 100,000 up to the age of 50 years for cohorts born from 1930 to 1939 APPENDIX TABLE A
ESTIMATED INCIDENCE OF NEW TUBERCULOUS INFECTION (The Netherlands)

ESTIMATION DE LA PREVALENCE DE L'INFECTION TUBERCULEUSE pour 100,000 sujets, jusqu'à l'age de 50 ans, appartenant aux cohortes
ESTIMATION DE L'INCIDENCE DE LA PRIMO-INFECTION TUBERCULEUSE nées de 1930 à 1939 (Pays-Bas)

| YEAR | 0<br>25 | 1<br>26 | 2<br>27 | 3<br>28 | 4<br>29 | 5<br>30 | 6<br>31 | 7<br>32 | 8<br>33 | 9<br>34 | 10<br>35 | 11<br>36 | 12<br>37 | 13<br>38 | 14<br>39 | 15<br>40 | 16<br>41 | 17<br>42 | 18<br>43 | 19<br>44 | 20<br>45 | 21<br>46 | 22<br>47 | 23<br>48 | 24<br>49 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1930. | | 3922 | 7492 | 10749 | 13727 | 16454 | 18955 | 21254 | 23370 | 25320 | 27120 | 28640 | 29937 | 31048 | 32002 | 32822 | 33528 | 34138 | 34664 | 35119 | 35513 | 35854 | 36149 | 36406 | 36629 | |
| | 36822 | 36990 | 37136 | 37263 | 37374 | 37469 | 37553 | 37625 | 37688 | 37743 | 37791 | 37832 | 37868 | 37900 | 37927 | 37951 | 37972 | 37990 | 38006 | 38020 | 38032 | 38042 | 38052 | 38060 | 38066 | 38073 |
| | 3922 | 3570 | 3257 | 2977 | 2727 | 2501 | 2298 | 2116 | 1950 | 1801 | 1520 | 1297 | 1111 | 954 | 820 | 706 | 610 | 526 | 455 | 394 | 341 | 296 | 257 | 223 | 193 | |
| | 168 | 146 | 127 | 110 | 96 | 83 | 72 | 63 | 55 | 48 | 42 | 36 | 31 | 27 | 24 | 21 | 18 | 16 | 14 | 12 | 11 | 9 | 8 | 7 | 6 | |
| 1931. | | 3716 | 7106 | 10205 | 13044 | 15647 | 18039 | 20242 | 22271 | 24145 | 25727 | 27077 | 28234 | 29226 | 30080 | 30815 | 31449 | 31997 | 32470 | 32880 | 33235 | 33543 | 33810 | 34042 | 34243 | |
| | 34418 | 34570 | 34702 | 34817 | 34917 | 35003 | 35079 | 35144 | 35201 | 35251 | 35295 | 35332 | 35365 | 35393 | 35418 | 35440 | 35459 | 35476 | 35490 | 35502 | 35513 | 35523 | 35531 | 35538 | 35545 | 35550 |
| | 3716 | 3390 | 3099 | 2838 | 2603 | 2392 | 2202 | 2030 | 1874 | 1582 | 1350 | 1157 | 993 | 854 | 735 | 634 | 548 | 473 | 410 | 355 | 308 | 257 | 232 | 201 | 175 | |
| | 152 | 132 | 115 | 100 | 87 | 75 | 66 | 57 | 50 | 43 | 38 | 32 | 28 | 25 | 22 | 19 | 17 | 14 | 12 | 11 | 10 | 8 | 7 | 6 | 6 | |
| 1932. | | 3521 | 6740 | 9688 | 12391 | 14876 | 17163 | 19272 | 21218 | 22860 | 24263 | 25464 | 26495 | 27381 | 28145 | 28804 | 29372 | 29864 | 30290 | 30658 | 30978 | 31256 | 31496 | 31705 | 31887 | |
| | 32045 | 32182 | 32301 | 32405 | 32495 | 32573 | 32641 | 32701 | 32752 | 32797 | 32836 | 32870 | 32900 | 32926 | 32949 | 32968 | 32985 | 33000 | 33013 | 33024 | 33034 | 33043 | 33050 | 33057 | 33063 | 33069 |
| | 3521 | 3219 | 2948 | 2704 | 2485 | 2287 | 2108 | 1946 | 1643 | 1402 | 1201 | 1031 | 886 | 763 | 659 | 569 | 492 | 426 | 369 | 320 | 277 | 241 | 209 | 182 | 158 | |
| | 137 | 119 | 104 | 90 | 78 | 68 | 59 | 52 | 45 | 39 | 34 | 30 | 26 | 23 | 19 | 17 | 15 | 13 | 11 | 10 | 9 | 7 | 7 | 6 | 6 | |
| 1933. | | 3336 | 6392 | 9194 | 11769 | 14140 | 16325 | 18343 | 20045 | 21499 | 22744 | 23812 | 24731 | 25522 | 26205 | 26795 | 27304 | 27746 | 28128 | 28459 | 28747 | 28996 | 29213 | 29401 | 29565 | |
| | 29707 | 29831 | 29938 | 30031 | 30112 | 30183 | 30244 | 30298 | 30345 | 30385 | 30420 | 30451 | 30478 | 30501 | 30522 | 30540 | 30555 | 30568 | 30580 | 30590 | 30599 | 30607 | 30614 | 30620 | 30626 | 30633 |
| | 3336 | 3056 | 2803 | 2575 | 2371 | 2185 | 2017 | 1703 | 1454 | 1245 | 1068 | 919 | 791 | 683 | 590 | 510 | 441 | 382 | 331 | 288 | 249 | 217 | 188 | 164 | 142 | |
| | 124 | 107 | 93 | 81 | 71 | 61 | 54 | 47 | 40 | 35 | 31 | 27 | 24 | 20 | 18 | 15 | 13 | 12 | 10 | 9 | 8 | 7 | 6 | 6 | 6 | |
| 1934. | | 3161 | 6060 | 8724 | 11177 | 13438 | 15525 | 17286 | 18790 | 20078 | 21183 | 22134 | 22952 | 23658 | 24268 | 24795 | 25252 | 25647 | 25990 | 26288 | 26546 | 26770 | 26965 | 27134 | 27281 | |
| | 27409 | 27520 | 27617 | 27701 | 27774 | 27837 | 27893 | 27941 | 27983 | 28019 | 28050 | 28079 | 28103 | 28124 | 28143 | 28158 | 28172 | 28184 | 28195 | 28204 | 28212 | 28219 | 28226 | 28232 | 28239 | 28245 |
| | 3161 | 2899 | 2664 | 2453 | 2261 | 2087 | 1761 | 1504 | 1288 | 1105 | 951 | 818 | 707 | 610 | 527 | 456 | 395 | 343 | 298 | 258 | 224 | 195 | 169 | 147 | 128 | |
| | 111 | 96 | 84 | 73 | 64 | 56 | 48 | 42 | 36 | 32 | 28 | 24 | 21 | 19 | 16 | 14 | 12 | 11 | 9 | 8 | 7 | 6 | 6 | 6 | 6 | |
| 1935. | | 2994 | 5745 | 8278 | 10612 | 12767 | 14586 | 16139 | 17469 | 18610 | 19592 | 20437 | 21167 | 21796 | 22341 | 22812 | 23220 | 23574 | 23882 | 24148 | 24379 | 24580 | 24755 | 24907 | 25040 | |
| | 25154 | 25254 | 25341 | 25416 | 25482 | 25539 | 25589 | 25632 | 25669 | 25702 | 25731 | 25756 | 25778 | 25797 | 25813 | 25827 | 25840 | 25851 | 25861 | 25869 | 25876 | 25883 | 25890 | 25896 | 25903 | 25910 |
| | 2994 | 2751 | 2533 | 2334 | 2155 | 1819 | 1553 | 1330 | 1141 | 982 | 845 | 730 | 630 | 544 | 471 | 408 | 354 | 307 | 266 | 231 | 201 | 175 | 152 | 132 | 115 | |
| | 100 | 87 | 75 | 66 | 57 | 50 | 43 | 37 | 33 | 29 | 25 | 22 | 19 | 16 | 14 | 13 | 11 | 10 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | |
| 1936. | | 2836 | 5447 | 7853 | 10075 | 11950 | 13551 | 14922 | 16098 | 17110 | 17981 | 18733 | 19383 | 19944 | 20430 | 20851 | 21216 | 21532 | 21807 | 22045 | 22253 | 22433 | 22590 | 22726 | 22844 | |
| | 22947 | 23036 | 23114 | 23182 | 23241 | 23292 | 23337 | 23375 | 23409 | 23439 | 23465 | 23487 | 23507 | 23524 | 23538 | 23551 | 23563 | 23573 | 23581 | 23589 | 23595 | 23602 | 23609 | 23616 | 23623 | 23630 |
| | 2836 | 2611 | 2406 | 2222 | 1875 | 1601 | 1371 | 1177 | 1012 | 871 | 752 | 649 | 561 | 486 | 421 | 365 | 317 | 275 | 238 | 207 | 180 | 157 | 136 | 118 | 103 | |
| | 89 | 78 | 68 | 59 | 51 | 44 | 38 | 34 | 30 | 26 | 22 | 20 | 17 | 15 | 13 | 11 | 10 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | |
| 1937. | | 2687 | 5164 | 7450 | 9380 | 11027 | 12438 | 13649 | 14691 | 15587 | 16361 | 17030 | 17607 | 18107 | 18540 | 18916 | 19242 | 19525 | 19770 | 19983 | 20169 | 20330 | 20471 | 20592 | 20698 | |
| | 20790 | 20870 | 20940 | 21000 | 21053 | 21099 | 21139 | 21173 | 21204 | 21231 | 21254 | 21274 | 21291 | 21306 | 21320 | 21332 | 21342 | 21350 | 21358 | 21365 | 21372 | 21380 | 21387 | 21394 | 21401 | 21408 |
| | 2687 | 2477 | 2287 | 1930 | 1647 | 1411 | 1211 | 1041 | 897 | 774 | 668 | 577 | 500 | 433 | 376 | 326 | 283 | 245 | 213 | 186 | 161 | 140 | 122 | 106 | 92 | |
| | 80 | 70 | 61 | 53 | 46 | 39 | 35 | 31 | 27 | 23 | 20 | 17 | 15 | 13 | 12 | 10 | 9 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| 1938. | | 2545 | 4895 | 6878 | 8571 | 10021 | 11265 | 12335 | 13257 | 14052 | 14739 | 15332 | 15846 | 16291 | 16677 | 17012 | 17303 | 17555 | 17774 | 17965 | 18131 | 18275 | 18400 | 18508 | 18603 | |
| | 18685 | 18756 | 18819 | 18873 | 18920 | 18961 | 18997 | 19028 | 19056 | 19079 | 19100 | 19118 | 19133 | 19147 | 19159 | 19170 | 19179 | 19187 | 19194 | 19201 | 19209 | 19216 | 19223 | 19230 | 19238 | 19245 |
| | 2545 | 2350 | 1983 | 1693 | 1450 | 1244 | 1070 | 921 | 795 | 687 | 593 | 514 | 445 | 386 | 335 | 290 | 252 | 219 | 191 | 166 | 144 | 125 | 109 | 95 | 82 | |
| | 72 | 63 | 54 | 47 | 41 | 36 | 32 | 28 | 23 | 21 | 18 | 15 | 14 | 12 | 11 | 9 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| 1939. | | 2411 | 4446 | 6183 | 7671 | 8948 | 10046 | 10991 | 11807 | 12512 | 13121 | 13648 | 14105 | 14501 | 14845 | 15143 | 15402 | 15627 | 15823 | 15993 | 16140 | 16269 | 16380 | 16477 | 16561 | |
| | 16635 | 16699 | 16755 | 16803 | 16845 | 16881 | 16914 | 16942 | 16966 | 16988 | 17006 | 17022 | 17036 | 17048 | 17059 | 17068 | 17076 | 17084 | 17091 | 17099 | 17106 | 17114 | 17121 | 17129 | 17136 | 17144 |
| | 2411 | 2035 | 1737 | 1488 | 1277 | 1098 | 945 | 816 | 705 | 609 | 527 | 457 | 396 | 344 | 298 | 259 | 225 | 196 | 170 | 148 | 128 | 111 | 97 | 84 | 73 | |
| | 64 | 56 | 43 | 42 | 37 | 32 | 28 | 24 | 22 | 18 | 16 | 14 | 12 | 11 | 9 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |

ESTIMATED PREVALENCE OF TUBERCULOUS INFECTION per 100,000 up to the age of 50 years for cohorts born from 1940 to 1949 APPENDIX TABLE A
ESTIMATED INCIDENCE OF NEW TUBERCULOUS INFECTION (The Netherlands)

ESTIMATION DE LA PREVALENCE DE L'INFECTION TUBERCULEUSE pour 100,000 sujets, jusqu'à l'âge de 50 ans, appartenant aux cohortes
ESTIMATION DE L'INCIDENCE DE LA PRIMO-INFECTION TUBERCULEUSE nées de 1940 à 1949 (Pays-Bas)

| YEAR | 0<br>25 | 1<br>26 | 2<br>27 | 3<br>28 | 4<br>29 | 5<br>30 | 6<br>31 | 7<br>32 | 8<br>33 | 9<br>34 | 10<br>35 | 11<br>36 | 12<br>37 | 13<br>38 | 14<br>39 | 15<br>40 | 16<br>41 | 17<br>42 | 18<br>43 | 19<br>44 | 20<br>45 | 21<br>46 | 22<br>47 | 23<br>48 | 24<br>49 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1940. | | 2085 | 3065 | 5390 | 6698 | 7823 | 8792 | 9629 | 10351 | 10975 | 11515 | 11983 | 12389 | 12741 | 13046 | 13312 | 13542 | 13743 | 13917 | 14069 | 14200 | 14314 | 14414 | 14500 | 14575 | |
| | 14641 | 14698 | 14748 | 14790 | 14828 | 14861 | 14890 | 14915 | 14937 | 14955 | 14972 | 14986 | 14999 | 15010 | 15019 | 15028 | 15035 | 15043 | 15051 | 15058 | 15066 | 15074 | 15081 | 15089 | 15097 | 15104 |
| | 2085 | 1780 | 1525 | 1308 | 1125 | 969 | 836 | 722 | 624 | 540 | 468 | 406 | 352 | 305 | 265 | 231 | 201 | 174 | 152 | 131 | 114 | 99 | 86 | 75 | 66 | |
| | 57 | 49 | 43 | 37 | 33 | 29 | 25 | 22 | 19 | 16 | 14 | 13 | 11 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| 1941. | | 1818 | 3375 | 4711 | 5861 | 6850 | 7704 | 8442 | 9079 | 9631 | 10109 | 10523 | 10883 | 11195 | 11466 | 11701 | 11906 | 12084 | 12239 | 12373 | 12490 | 12591 | 12679 | 12756 | 12823 | |
| | 12882 | 12932 | 12976 | 13014 | 13048 | 13078 | 13103 | 13125 | 13145 | 13161 | 13176 | 13189 | 13200 | 13210 | 13218 | 13226 | 13234 | 13242 | 13250 | 13257 | 13265 | 13273 | 13281 | 13289 | 13296 | 13304 |
| | 1818 | 1557 | 1336 | 1149 | 989 | 854 | 737 | 637 | 552 | 478 | 414 | 360 | 312 | 271 | 236 | 205 | 178 | 155 | 134 | 117 | 102 | 88 | 77 | 67 | 58 | |
| | 51 | 44 | 38 | 34 | 30 | 25 | 23 | 19 | 17 | 15 | 13 | 11 | 10 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| 1942. | | 1586 | 2947 | 4118 | 5125 | 5995 | 6746 | 7395 | 7957 | 8444 | 8866 | 9233 | 9551 | 9826 | 10066 | 10275 | 10456 | 10614 | 10750 | 10869 | 10973 | 11063 | 11141 | 11209 | 11269 | |
| | 11320 | 11364 | 11403 | 11438 | 11468 | 11494 | 11517 | 11536 | 11553 | 11568 | 11581 | 11593 | 11603 | 11611 | 11619 | 11627 | 11635 | 11643 | 11651 | 11659 | 11667 | 11675 | 11683 | 11691 | 11699 | 11707 |
| | 1586 | 1361 | 1170 | 1008 | 870 | 751 | 649 | 562 | 487 | 422 | 366 | 318 | 276 | 240 | 209 | 181 | 158 | 137 | 119 | 103 | 90 | 78 | 68 | 59 | 51 | |
| | 44 | 39 | 35 | 30 | 26 | 23 | 19 | 17 | 15 | 13 | 11 | 10 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| 1943. | | 1383 | 2572 | 3596 | 4480 | 5244 | 5903 | 6474 | 6969 | 7398 | 7770 | 8093 | 8373 | 8617 | 8829 | 9013 | 9173 | 9312 | 9433 | 9538 | 9629 | 9709 | 9778 | 9839 | 9891 | |
| | 9936 | 9976 | 10011 | 10041 | 10067 | 10091 | 10111 | 10128 | 10143 | 10156 | 10168 | 10178 | 10187 | 10195 | 10203 | 10211 | 10219 | 10227 | 10236 | 10244 | 10252 | 10260 | 10268 | 10276 | 10284 | 10292 |
| | 1383 | 1189 | 1024 | 884 | 763 | 660 | 571 | 495 | 429 | 372 | 323 | 280 | 244 | 212 | 184 | 160 | 139 | 121 | 105 | 91 | 80 | 70 | 60 | 52 | 45 | |
| | 40 | 35 | 31 | 26 | 23 | 20 | 17 | 15 | 13 | 12 | 10 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| 1944. | | 1206 | 2244 | 3141 | 3915 | 4583 | 5163 | 5664 | 6099 | 6477 | 6804 | 7088 | 7335 | 7550 | 7737 | 7899 | 8040 | 8163 | 8269 | 8362 | 8443 | 8513 | 8574 | 8627 | 8673 | |
| | 8713 | 8749 | 8780 | 8806 | 8830 | 8850 | 8867 | 8883 | 8897 | 8908 | 8918 | 8927 | 8936 | 8944 | 8952 | 8960 | 8968 | 8977 | 8985 | 8993 | 9001 | 9009 | 9018 | 9026 | 9034 | 9042 |
| | 1206 | 1038 | 896 | 774 | 669 | 579 | 502 | 435 | 377 | 327 | 284 | 247 | 215 | 187 | 162 | 141 | 122 | 107 | 93 | 81 | 70 | 61 | 53 | 46 | 40 | |
| | 36 | 31 | 26 | 24 | 20 | 17 | 15 | 14 | 12 | 10 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| 1945. | | 1051 | 1958 | 2742 | 3419 | 4005 | 4513 | 4953 | 5335 | 5666 | 5954 | 6204 | 6422 | 6611 | 6775 | 6918 | 7042 | 7149 | 7243 | 7325 | 7396 | 7458 | 7512 | 7558 | 7599 | |
| | 7635 | 7666 | 7693 | 7717 | 7737 | 7755 | 7771 | 7784 | 7796 | 7807 | 7816 | 7824 | 7832 | 7841 | 7849 | 7857 | 7866 | 7874 | 7882 | 7890 | 7899 | 7907 | 7915 | 7924 | 7932 | 7940 |
| | 1051 | 907 | 783 | 677 | 586 | 508 | 440 | 382 | 331 | 288 | 250 | 218 | 189 | 164 | 143 | 124 | 108 | 94 | 82 | 71 | 62 | 54 | 46 | 41 | 36 | |
| | 31 | 27 | 24 | 20 | 18 | 16 | 14 | 12 | 10 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| 1946. | | 917 | 1709 | 2393 | 2985 | 3498 | 3943 | 4329 | 4664 | 4955 | 5208 | 5428 | 5619 | 5785 | 5929 | 6054 | 6163 | 6258 | 6340 | 6413 | 6475 | 6530 | 6576 | 6617 | 6654 | |
| | 6686 | 6713 | 6737 | 6757 | 6775 | 6791 | 6805 | 6817 | 6827 | 6837 | 6845 | 6853 | 6862 | 6870 | 6879 | 6887 | 6895 | 6904 | 6912 | 6920 | 6929 | 6937 | 6946 | 6954 | 6962 | 6971 |
| | 917 | 792 | 684 | 592 | 513 | 445 | 386 | 335 | 291 | 253 | 220 | 191 | 166 | 144 | 125 | 109 | 95 | 82 | 72 | 63 | 54 | 47 | 41 | 36 | 32 | |
| | 27 | 24 | 21 | 18 | 16 | 14 | 12 | 10 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| 1947. | | 799 | 1489 | 2087 | 2605 | 3054 | 3444 | 3782 | 4075 | 4331 | 4553 | 4745 | 4913 | 5059 | 5185 | 5295 | 5390 | 5474 | 5546 | 5610 | 5664 | 5712 | 5753 | 5790 | 5822 | |
| | 5849 | 5874 | 5894 | 5912 | 5928 | 5942 | 5955 | 5965 | 5974 | 5983 | 5991 | 6000 | 6008 | 6017 | 6025 | 6034 | 6042 | 6051 | 6059 | 6067 | 6076 | 6084 | 6093 | 6101 | 6110 | 6118 |
| | 799 | 690 | 598 | 518 | 449 | 390 | 338 | 293 | 255 | 222 | 193 | 168 | 145 | 126 | 110 | 96 | 83 | 73 | 63 | 55 | 47 | 41 | 37 | 32 | 27 | |
| | 24 | 21 | 18 | 16 | 14 | 12 | 10 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| 1948. | | 696 | 1299 | 1821 | 2274 | 2666 | 3007 | 3303 | 3560 | 3784 | 3978 | 4147 | 4294 | 4421 | 4532 | 4628 | 4712 | 4786 | 4849 | 4905 | 4952 | 4994 | 5031 | 5063 | 5091 | |
| | 5116 | 5136 | 5154 | 5171 | 5185 | 5197 | 5208 | 5217 | 5226 | 5234 | 5243 | 5251 | 5260 | 5268 | 5277 | 5285 | 5294 | 5302 | 5311 | 5319 | 5328 | 5336 | 5345 | 5353 | 5362 | 5370 |
| | 696 | 603 | 522 | 453 | 393 | 341 | 296 | 257 | 224 | 194 | 169 | 147 | 127 | 111 | 96 | 84 | 73 | 64 | 55 | 48 | 42 | 37 | 32 | 28 | 25 | |
| | 21 | 18 | 16 | 14 | 12 | 10 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 1949. | | 607 | 1133 | 1589 | 1984 | 2327 | 2625 | 2884 | 3109 | 3305 | 3475 | 3623 | 3751 | 3863 | 3960 | 4044 | 4118 | 4183 | 4238 | 4286 | 4328 | 4365 | 4398 | 4426 | 4451 | |
| | 4472 | 4490 | 4506 | 4520 | 4533 | 4543 | 4553 | 4561 | 4570 | 4579 | 4587 | 4596 | 4604 | 4613 | 4621 | 4630 | 4639 | 4647 | 4656 | 4664 | 4673 | 4682 | 4690 | 4699 | 4707 | 4716 |
| | 607 | 526 | 456 | 396 | 343 | 298 | 259 | 225 | 196 | 170 | 148 | 128 | 112 | 97 | 85 | 74 | 64 | 56 | 48 | 42 | 37 | 33 | 28 | 25 | 21 | |
| | 18 | 16 | 14 | 12 | 11 | 10 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |

ESTIMATED PREVALENCE OF TUBERCULOUS INFECTION per 100,000 up to the age of 50 years for cohorts born from 1950 to 1960 APPENDIX TABLE A
ESTIMATED INCIDENCE OF NEW TUBERCULOUS INFECTION (The Netherlands)

ESTIMATION DE LA PREVALENCE DE L'INFECTION TUBERCULEUSE pour 100,000 sujets, jusqu'à l'âge de 50 ans, appartenant aux cohortes
ESTIMATION DE L'INCIDENCE DE LA PRIMO-INFECTION TUBERCULEUSE nées de 1950 a 1960 (Pays-Bas)

| YEAR | 0<br>25 | 1<br>26 | 2<br>27 | 3<br>28 | 4<br>29 | 5<br>30 | 6<br>31 | 7<br>32 | 8<br>33 | 9<br>34 | 10<br>35 | 11<br>36 | 12<br>37 | 13<br>38 | 14<br>39 | 15<br>40 | 16<br>41 | 17<br>42 | 18<br>43 | 19<br>44 | 20<br>45 | 21<br>46 | 22<br>47 | 23<br>48 | 24<br>49 | 50' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1950. | | 529 | 988 | 1386 | 1731 | 2030 | 2291 | 2518 | 2715 | 2886 | 3034 | 3163 | 3276 | 3373 | 3458 | 3533 | 3597 | 3653 | 3702 | 3744 | 3781 | 3814 | 3842 | 3867 | 3888 | |
| | 3906 | 3923 | 3937 | 3950 | 3960 | 3970 | 3979 | 3987 | 3996 | 4004 | 4013 | 4022 | 4030 | 4039 | 4048 | 4056 | 4065 | 4074 | 4082 | 4091 | 4099 | 4108 | 4117 | 4125 | 4134 | 4143 |
| | 529 | 459 | 398 | 345 | 300 | 261 | 227 | 197 | 171 | 149 | 129 | 112 | 98 | 85 | 74 | 65 | 56 | 48 | 42 | 38 | 33 | 28 | 25 | 21 | 18 | |
| | 16 | 14 | 12 | 11 | 10 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 1951. | | 461 | 861 | 1208 | 1509 | 1771 | 1999 | 2197 | 2369 | 2519 | 2648 | 2761 | 2860 | 2945 | 3020 | 3085 | 3141 | 3189 | 3232 | 3270 | 3303 | 3331 | 3356 | 3377 | 3395 | |
| | 3412 | 3426 | 3439 | 3450 | 3459 | 3468 | 3477 | 3485 | 3494 | 3503 | 3511 | 3520 | 3529 | 3537 | 3546 | 3555 | 3563 | 3572 | 3581 | 3589 | 3598 | 3607 | 3615 | 3624 | 3633 | 3641 |
| | 461 | 400 | 347 | 301 | 262 | 228 | 198 | 172 | 149 | 130 | 113 | 98 | 85 | 75 | 65 | 56 | 48 | 43 | 38 | 33 | 28 | 25 | 21 | 18 | 16 | |
| | 14 | 13 | 11 | 10 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 1952. | | 402 | 751 | 1053 | 1317 | 1545 | 1744 | 1917 | 2067 | 2198 | 2311 | 2410 | 2496 | 2571 | 2636 | 2692 | 2741 | 2784 | 2822 | 2855 | 2883 | 2908 | 2930 | 2948 | 2965 | |
| | 2979 | 2992 | 3002 | 3012 | 3021 | 3030 | 3038 | 3047 | 3056 | 3064 | 3073 | 3082 | 3091 | 3099 | 3108 | 3117 | 3125 | 3134 | 3143 | 3152 | 3160 | 3169 | 3178 | 3186 | 3195 | 3204 |
| | 402 | 349 | 303 | 263 | 229 | 199 | 173 | 150 | 130 | 113 | 99 | 86 | 75 | 65 | 56 | 49 | 43 | 38 | 33 | 28 | 25 | 21 | 18 | 16 | 15 | |
| | 13 | 11 | 10 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 1953. | | 350 | 654 | 918 | 1148 | 1348 | 1521 | 1672 | 1803 | 1917 | 2016 | 2102 | 2177 | 2243 | 2300 | 2348 | 2391 | 2430 | 2463 | 2491 | 2516 | 2538 | 2556 | 2573 | 2587 | |
| | 2600 | 2611 | 2621 | 2629 | 2638 | 2647 | 2656 | 2664 | 2673 | 2682 | 2691 | 2699 | 2708 | 2717 | 2726 | 2734 | 2743 | 2752 | 2761 | 2769 | 2778 | 2787 | 2796 | 2804 | 2813 | 2822 |
| | 350 | 304 | 264 | 230 | 200 | 174 | 151 | 131 | 114 | 99 | 86 | 75 | 66 | 57 | 49 | 43 | 38 | 33 | 28 | 25 | 21 | 19 | 17 | 15 | 13 | |
| | 11 | 10 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 1954. | | 305 | 570 | 801 | 1001 | 1175 | 1327 | 1458 | 1572 | 1672 | 1758 | 1834 | 1900 | 1956 | 2006 | 2049 | 2087 | 2120 | 2148 | 2174 | 2195 | 2214 | 2231 | 2245 | 2258 | |
| | 2269 | 2279 | 2287 | 2296 | 2305 | 2314 | 2323 | 2331 | 2340 | 2349 | 2358 | 2366 | 2375 | 2384 | 2393 | 2402 | 2410 | 2419 | 2428 | 2437 | 2446 | 2454 | 2463 | 2472 | 2481 | 2489 |
| | 305 | 265 | 231 | 200 | 174 | 151 | 131 | 114 | 99 | 87 | 76 | 66 | 57 | 49 | 43 | 38 | 33 | 28 | 25 | 22 | 19 | 17 | 15 | 13 | 11 | |
| | 10 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 1955. | | 266 | 497 | 698 | 873 | 1025 | 1156 | 1271 | 1371 | 1458 | 1533 | 1599 | 1657 | 1706 | 1749 | 1787 | 1821 | 1849 | 1875 | 1896 | 1915 | 1932 | 1946 | 1959 | 1970 | |
| | 1980 | 1988 | 1997 | 2006 | 2015 | 2024 | 2033 | 2041 | 2050 | 2059 | 2068 | 2077 | 2085 | 2094 | 2103 | 2112 | 2121 | 2129 | 2138 | 2147 | 2156 | 2165 | 2173 | 2182 | 2191 | 2200 |
| | 266 | 231 | 201 | 175 | 152 | 132 | 115 | 100 | 87 | 76 | 66 | 57 | 49 | 43 | 38 | 33 | 28 | 26 | 22 | 19 | 17 | 15 | 13 | 11 | 10 | |
| | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 1956. | | 232 | 434 | 609 | 761 | 893 | 1008 | 1108 | 1195 | 1271 | 1337 | 1394 | 1444 | 1487 | 1525 | 1559 | 1587 | 1613 | 1635 | 1653 | 1670 | 1685 | 1698 | 1708 | 1718 | |
| | 1727 | 1736 | 1745 | 1754 | 1762 | 1771 | 1780 | 1789 | 1798 | 1807 | 1815 | 1824 | 1833 | 1842 | 1851 | 1860 | 1868 | 1877 | 1886 | 1895 | 1904 | 1913 | 1921 | 1930 | 1939 | 1948 |
| | 232 | 202 | 175 | 152 | 132 | 115 | 100 | 87 | 76 | 66 | 57 | 49 | 43 | 38 | 33 | 29 | 26 | 22 | 19 | 17 | 15 | 13 | 11 | 10 | 9 | |
| | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 1957. | | 202 | 378 | 530 | 662 | 778 | 878 | 965 | 1041 | 1108 | 1165 | 1214 | 1258 | 1296 | 1330 | 1359 | 1384 | 1406 | 1425 | 1441 | 1456 | 1469 | 1480 | 1490 | 1498 | |
| | 1507 | 1516 | 1525 | 1534 | 1543 | 1552 | 1561 | 1569 | 1578 | 1587 | 1596 | 1605 | 1614 | 1623 | 1631 | 1640 | 1649 | 1658 | 1667 | 1676 | 1684 | 1693 | 1702 | 1711 | 1720 | 1729 |
| | 202 | 176 | 152 | 132 | 115 | 100 | 87 | 76 | 66 | 57 | 49 | 43 | 39 | 34 | 29 | 26 | 22 | 19 | 17 | 15 | 13 | 11 | 10 | 9 | 9 | |
| | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 1958. | | 176 | 329 | 461 | 577 | 677 | 765 | 841 | 907 | 965 | 1014 | 1058 | 1097 | 1130 | 1159 | 1185 | 1206 | 1225 | 1242 | 1257 | 1269 | 1280 | 1290 | 1299 | 1308 | |
| | 1317 | 1326 | 1335 | 1344 | 1352 | 1361 | 1370 | 1379 | 1388 | 1397 | 1406 | 1415 | 1423 | 1432 | 1441 | 1450 | 1459 | 1468 | 1477 | 1485 | 1494 | 1503 | 1512 | 1521 | 1530 | 1539 |
| | 176 | 153 | 133 | 115 | 100 | 87 | 76 | 66 | 57 | 50 | 44 | 39 | 34 | 29 | 26 | 22 | 19 | 17 | 15 | 13 | 11 | 10 | 9 | 9 | 9 | |
| | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 1959. | | 153 | 286 | 401 | 502 | 590 | 666 | 733 | 790 | 840 | 884 | 922 | 956 | 985 | 1010 | 1032 | 1051 | 1068 | 1083 | 1095 | 1106 | 1116 | 1125 | 1134 | 1143 | |
| | 1152 | 1161 | 1170 | 1178 | 1187 | 1196 | 1205 | 1214 | 1223 | 1232 | 1241 | 1250 | 1258 | 1267 | 1276 | 1285 | 1294 | 1303 | 1312 | 1321 | 1330 | 1338 | 1347 | 1356 | 1365 | 1374 |
| | 153 | 133 | 116 | 101 | 88 | 77 | 67 | 58 | 50 | 44 | 39 | 34 | 29 | 26 | 22 | 19 | 17 | 15 | 13 | 11 | 10 | 9 | 9 | 9 | 9 | |
| | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 1960. | | 133 | 249 | 350 | 437 | 514 | 581 | 638 | 688 | 732 | 770 | 804 | 833 | 859 | 880 | 899 | 916 | 931 | 944 | 955 | 965 | 974 | 982 | 991 | 1000 | |
| | 1009 | 1018 | 1027 | 1036 | 1045 | 1054 | 1063 | 1072 | 1080 | 1089 | 1098 | 1107 | 1116 | 1125 | 1134 | 1143 | 1152 | 1161 | 1169 | 1178 | 1187 | 1196 | 1205 | 1214 | 1223 | 1232 |
| | 133 | 116 | 101 | 88 | 77 | 67 | 58 | 50 | 44 | 39 | 34 | 29 | 26 | 22 | 19 | 17 | 15 | 13 | 11 | 10 | 9 | 9 | 9 | 9 | 9 | |
| | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |

## ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 5.5 YEARS ( 5 YEARS AT LAST BIRTHDAY)

## RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 5.5 ANS ( 5 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year
Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant |
| 0.2 | 0.035 | 0.037 | 0.033 | 0.039 | 0.032 | 0.041 | 0.030 | 0.042 | 0.028 | 0.044 | 0.026 | 0.046 | 0.025 | 0.048 |
| 0.4 | 0.071 | 0.074 | 0.067 | 0.078 | 0.063 | 0.081 | 0.060 | 0.085 | 0.056 | 0.088 | 0.053 | 0.092 | 0.050 | 0.096 |
| 0.6 | 0.106 | 0.112 | 0.101 | 0.117 | 0.095 | 0.122 | 0.090 | 0.127 | 0.085 | 0.133 | 0.080 | 0.138 | 0.075 | 0.143 |
| 0.8 | 0.142 | 0.149 | 0.134 | 0.156 | 0.127 | 0.163 | 0.120 | 0.170 | 0.113 | 0.177 | 0.106 | 0.184 | 0.100 | 0.191 |
| 1.0 | 0.178 | 0.187 | 0.168 | 0.195 | 0.159 | 0.204 | 0.150 | 0.212 | 0.141 | 0.221 | 0.133 | 0.230 | 0.125 | 0.239 |
| 1.5 | 0.267 | 0.281 | 0.252 | 0.293 | 0.238 | 0.306 | 0.225 | 0.319 | 0.212 | 0.333 | 0.200 | 0.346 | 0.188 | 0.360 |
| 2.0 | 0.357 | 0.375 | 0.337 | 0.392 | 0.319 | 0.409 | 0.301 | 0.426 | 0.283 | 0.444 | 0.267 | 0.462 | 0.251 | 0.481 |
| 2.5 | 0.447 | 0.470 | 0.422 | 0.491 | 0.399 | 0.512 | 0.377 | 0.534 | 0.355 | 0.556 | 0.334 | 0.579 | 0.315 | 0.602 |
| 3.0 | 0.537 | 0.565 | 0.508 | 0.590 | 0.480 | 0.616 | 0.453 | 0.642 | 0.427 | 0.669 | 0.402 | 0.696 | 0.378 | 0.724 |
| 3.5 | 0.628 | 0.660 | 0.594 | 0.690 | 0.561 | 0.720 | 0.530 | 0.751 | 0.499 | 0.782 | 0.470 | 0.814 | 0.443 | 0.846 |
| 4.0 | 0.719 | 0.756 | 0.680 | 0.790 | 0.643 | 0.825 | 0.607 | 0.860 | 0.572 | 0.896 | 0.539 | 0.932 | 0.507 | 0.969 |
| 4.5 | 0.811 | 0.852 | 0.767 | 0.891 | 0.725 | 0.930 | 0.684 | 0.969 | 0.645 | 1.010 | 0.607 | 1.051 | 0.572 | 1.092 |
| 5.0 | 0.903 | 0.949 | 0.854 | 0.992 | 0.807 | 1.035 | 0.762 | 1.079 | 0.718 | 1.124 | 0.676 | 1.170 | 0.637 | 1.216 |
| 5.5 | 0.996 | 1.046 | 0.942 | 1.093 | 0.890 | 1.141 | 0.840 | 1.189 | 0.792 | 1.239 | 0.746 | 1.289 | 0.702 | 1.340 |
| 6.0 | 1.088 | 1.144 | 1.029 | 1.195 | 0.973 | 1.247 | 0.918 | 1.300 | 0.866 | 1.354 | 0.815 | 1.409 | 0.767 | 1.465 |
| 6.5 | 1.182 | 1.242 | 1.118 | 1.297 | 1.056 | 1.354 | 0.997 | 1.412 | 0.940 | 1.470 | 0.885 | 1.530 | 0.833 | 1.590 |
| 7.0 | 1.275 | 1.340 | 1.206 | 1.400 | 1.140 | 1.461 | 1.076 | 1.523 | 1.015 | 1.587 | 0.956 | 1.651 | 0.899 | 1.716 |
| 7.5 | 1.369 | 1.439 | 1.295 | 1.503 | 1.224 | 1.569 | 1.155 | 1.636 | 1.090 | 1.703 | 1.026 | 1.772 | 0.966 | 1.842 |
| 8.0 | 1.464 | 1.538 | 1.385 | 1.607 | 1.308 | 1.677 | 1.235 | 1.748 | 1.165 | 1.821 | 1.097 | 1.894 | 1.033 | 1.969 |
| 9.0 | 1.654 | 1.738 | 1.565 | 1.816 | 1.479 | 1.895 | 1.396 | 1.975 | 1.316 | 2.057 | 1.240 | 2.140 | 1.167 | 2.224 |
| 10.0 | 1.846 | 1.940 | 1.747 | 2.026 | 1.651 | 2.114 | 1.558 | 2.204 | 1.470 | 2.295 | 1.385 | 2.388 | 1.303 | 2.481 |
| 11.0 | 2.040 | 2.143 | 1.930 | 2.239 | 1.824 | 2.336 | 1.722 | 2.435 | 1.624 | 2.535 | 1.530 | 2.637 | 1.440 | 2.741 |
| 12.0 | 2.234 | 2.349 | 2.115 | 2.453 | 1.999 | 2.559 | 1.887 | 2.668 | 1.780 | 2.778 | 1.677 | 2.889 | 1.579 | 3.003 |
| 13.0 | 2.433 | 2.556 | 2.302 | 2.670 | 2.176 | 2.785 | 2.054 | 2.903 | 1.938 | 3.022 | 1.826 | 3.144 | 1.719 | 3.267 |
| 14.0 | 2.632 | 2.765 | 2.491 | 2.888 | 2.354 | 3.013 | 2.223 | 3.140 | 2.097 | 3.269 | 1.976 | 3.400 | 1.860 | 3.533 |
| 15.0 | 2.833 | 2.977 | 2.681 | 3.108 | 2.535 | 3.243 | 2.393 | 3.379 | 2.258 | 3.518 | 2.128 | 3.659 | 2.003 | 3.802 |
| 16.0 | 3.037 | 3.190 | 2.874 | 3.331 | 2.717 | 3.475 | 2.565 | 3.621 | 2.420 | 3.769 | 2.281 | 3.920 | 2.147 | 4.073 |
| 17.0 | 3.242 | 3.405 | 3.068 | 3.556 | 2.900 | 3.709 | 2.739 | 3.865 | 2.584 | 4.023 | 2.436 | 4.184 | 2.293 | 4.346 |
| 18.0 | 3.449 | 3.623 | 3.264 | 3.782 | 3.086 | 3.945 | 2.915 | 4.111 | 2.750 | 4.279 | 2.592 | 4.450 | 2.440 | 4.622 |
| 19.0 | 3.658 | 3.842 | 3.463 | 4.012 | 3.274 | 4.184 | 3.092 | 4.359 | 2.918 | 4.538 | 2.750 | 4.718 | 2.589 | 4.901 |
| 20.0 | 3.870 | 4.064 | 3.663 | 4.245 | 3.463 | 4.425 | 3.271 | 4.610 | 3.087 | 4.799 | 2.910 | 4.989 | 2.740 | 5.182 |
| 22.0 | 4.299 | 4.515 | 4.070 | 4.713 | 3.849 | 4.915 | 3.636 | 5.120 | 3.431 | 5.328 | 3.234 | 5.539 | 3.046 | 5.753 |
| 24.0 | 4.738 | 4.975 | 4.486 | 5.192 | 4.242 | 5.414 | 4.008 | 5.640 | 3.783 | 5.859 | 3.566 | 6.101 | 3.359 | 6.335 |
| 26.0 | 5.186 | 5.445 | 4.911 | 5.682 | 4.645 | 5.924 | 4.389 | 6.171 | 4.143 | 6.420 | 3.906 | 6.673 | 3.679 | 6.929 |
| 28.0 | 5.644 | 5.925 | 5.345 | 6.183 | 5.057 | 6.446 | 4.779 | 6.713 | 4.511 | 6.983 | 4.254 | 7.258 | 4.007 | 7.535 |
| 30.0 | 6.113 | 6.417 | 5.790 | 6.695 | 5.478 | 6.979 | 5.178 | 7.267 | 4.888 | 7.559 | 4.610 | 7.855 | 4.343 | 8.154 |
| 32.0 | 6.594 | 6.920 | 6.246 | 7.219 | 5.910 | 7.524 | 5.587 | 7.834 | 5.275 | 8.148 | 4.975 | 8.466 | 4.688 | 8.787 |
| 34.0 | 7.085 | 7.435 | 6.713 | 7.756 | 6.353 | 8.082 | 6.006 | 8.414 | 5.671 | 8.750 | 5.350 | 9.090 | 5.042 | 9.434 |
| 36.0 | 7.590 | 7.963 | 7.192 | 8.306 | 6.807 | 8.654 | 6.436 | 9.008 | 6.078 | 9.367 | 5.735 | 9.730 | 5.405 | 10.10 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 6.5 YEARS ( 6 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 6.5 ANS ( 6 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

| | Approximate percentage decrease in risk of infection each year / Pourcentage approximatif de la diminution, chaque année, du risque d'infection | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant |
| 0.2 | 0.030 | 0.031 | 0.028 | 0.032 | 0.026 | 0.033 | 0.024 | 0.035 | 0.023 | 0.036 | 0.021 | 0.037 | 0.020 | 0.038 |
| 0.4 | 0.060 | 0.063 | 0.056 | 0.065 | 0.052 | 0.067 | 0.049 | 0.069 | 0.045 | 0.071 | 0.042 | 0.073 | 0.039 | 0.075 |
| 0.6 | 0.090 | 0.094 | 0.084 | 0.097 | 0.078 | 0.101 | 0.073 | 0.104 | 0.068 | 0.107 | 0.063 | 0.110 | 0.059 | 0.113 |
| 0.8 | 0.120 | 0.126 | 0.112 | 0.130 | 0.105 | 0.134 | 0.098 | 0.138 | 0.091 | 0.143 | 0.085 | 0.147 | 0.079 | 0.151 |
| 1.0 | 0.150 | 0.157 | 0.140 | 0.163 | 0.131 | 0.168 | 0.122 | 0.173 | 0.114 | 0.178 | 0.106 | 0.183 | 0.098 | 0.188 |
| 1.5 | 0.225 | 0.236 | 0.210 | 0.244 | 0.197 | 0.252 | 0.183 | 0.260 | 0.171 | 0.268 | 0.159 | 0.276 | 0.148 | 0.283 |
| 2.0 | 0.300 | 0.316 | 0.281 | 0.327 | 0.263 | 0.337 | 0.245 | 0.348 | 0.228 | 0.358 | 0.213 | 0.368 | 0.198 | 0.378 |
| 2.5 | 0.376 | 0.396 | 0.352 | 0.409 | 0.329 | 0.422 | 0.307 | 0.436 | 0.286 | 0.449 | 0.266 | 0.461 | 0.248 | 0.474 |
| 3.0 | 0.453 | 0.476 | 0.423 | 0.492 | 0.396 | 0.508 | 0.369 | 0.524 | 0.344 | 0.539 | 0.320 | 0.555 | 0.298 | 0.570 |
| 3.5 | 0.529 | 0.556 | 0.495 | 0.575 | 0.463 | 0.594 | 0.432 | 0.612 | 0.403 | 0.631 | 0.375 | 0.648 | 0.348 | 0.666 |
| 4.0 | 0.606 | 0.637 | 0.567 | 0.659 | 0.530 | 0.680 | 0.495 | 0.701 | 0.461 | 0.722 | 0.429 | 0.743 | 0.399 | 0.763 |
| 4.5 | 0.683 | 0.718 | 0.639 | 0.743 | 0.598 | 0.767 | 0.558 | 0.791 | 0.520 | 0.814 | 0.484 | 0.837 | 0.450 | 0.860 |
| 5.0 | 0.761 | 0.800 | 0.712 | 0.827 | 0.666 | 0.854 | 0.621 | 0.880 | 0.579 | 0.907 | 0.539 | 0.932 | 0.501 | 0.957 |
| 5.5 | 0.839 | 0.882 | 0.785 | 0.912 | 0.734 | 0.941 | 0.685 | 0.971 | 0.638 | 0.999 | 0.594 | 1.028 | 0.552 | 1.055 |
| 6.0 | 0.917 | 0.964 | 0.858 | 0.997 | 0.802 | 1.029 | 0.749 | 1.061 | 0.698 | 1.093 | 0.650 | 1.123 | 0.604 | 1.154 |
| 6.5 | 0.996 | 1.047 | 0.932 | 1.082 | 0.871 | 1.117 | 0.813 | 1.152 | 0.758 | 1.186 | 0.706 | 1.220 | 0.656 | 1.252 |
| 7.0 | 1.075 | 1.130 | 1.006 | 1.168 | 0.940 | 1.206 | 0.878 | 1.243 | 0.818 | 1.280 | 0.762 | 1.316 | 0.708 | 1.352 |
| 7.5 | 1.154 | 1.213 | 1.080 | 1.254 | 1.010 | 1.295 | 0.943 | 1.335 | 0.879 | 1.375 | 0.818 | 1.413 | 0.760 | 1.451 |
| 8.0 | 1.234 | 1.297 | 1.155 | 1.341 | 1.080 | 1.384 | 1.008 | 1.427 | 0.940 | 1.470 | 0.875 | 1.511 | 0.813 | 1.551 |
| 9.0 | 1.394 | 1.465 | 1.305 | 1.515 | 1.220 | 1.564 | 1.139 | 1.613 | 1.062 | 1.661 | 0.989 | 1.707 | 0.919 | 1.753 |
| 10.0 | 1.557 | 1.636 | 1.457 | 1.691 | 1.362 | 1.746 | 1.272 | 1.800 | 1.186 | 1.853 | 1.104 | 1.905 | 1.026 | 1.956 |
| 11.0 | 1.726 | 1.808 | 1.611 | 1.869 | 1.506 | 1.929 | 1.406 | 1.989 | 1.311 | 2.048 | 1.220 | 2.105 | 1.134 | 2.162 |
| 12.0 | 1.885 | 1.981 | 1.765 | 2.048 | 1.651 | 2.114 | 1.541 | 2.180 | 1.437 | 2.244 | 1.338 | 2.307 | 1.244 | 2.369 |
| 13.0 | 2.052 | 2.156 | 1.922 | 2.229 | 1.797 | 2.301 | 1.678 | 2.372 | 1.564 | 2.442 | 1.456 | 2.511 | 1.354 | 2.578 |
| 14.0 | 2.224 | 2.333 | 2.080 | 2.412 | 1.945 | 2.490 | 1.816 | 2.567 | 1.693 | 2.642 | 1.576 | 2.716 | 1.466 | 2.789 |
| 15.0 | 2.394 | 2.512 | 2.239 | 2.597 | 2.094 | 2.680 | 1.955 | 2.763 | 1.823 | 2.844 | 1.697 | 2.924 | 1.578 | 3.002 |
| 16.0 | 2.563 | 2.692 | 2.400 | 2.783 | 2.244 | 2.873 | 2.096 | 2.961 | 1.954 | 3.048 | 1.820 | 3.133 | 1.692 | 3.217 |
| 17.0 | 2.736 | 2.875 | 2.563 | 2.971 | 2.397 | 3.067 | 2.238 | 3.161 | 2.087 | 3.254 | 1.944 | 3.345 | 1.808 | 3.434 |
| 18.0 | 2.912 | 3.059 | 2.727 | 3.162 | 2.551 | 3.263 | 2.382 | 3.364 | 2.222 | 3.462 | 2.069 | 3.559 | 1.924 | 3.653 |
| 19.0 | 3.089 | 3.245 | 2.893 | 3.354 | 2.706 | 3.461 | 2.528 | 3.568 | 2.357 | 3.672 | 2.195 | 3.774 | 2.042 | 3.874 |
| 20.0 | 3.268 | 3.433 | 3.061 | 3.548 | 2.863 | 3.662 | 2.675 | 3.774 | 2.495 | 3.884 | 2.323 | 3.992 | 2.161 | 4.098 |
| 22.0 | 3.632 | 3.815 | 3.403 | 3.942 | 3.183 | 4.069 | 2.973 | 4.193 | 2.774 | 4.315 | 2.593 | 4.435 | 2.403 | 4.552 |
| 24.0 | 4.004 | 4.205 | 3.752 | 4.345 | 3.510 | 4.484 | 3.279 | 4.621 | 3.059 | 4.756 | 2.850 | 4.887 | 2.651 | 5.016 |
| 26.0 | 4.384 | 4.604 | 4.109 | 4.757 | 3.844 | 4.909 | 3.592 | 5.059 | 3.351 | 5.206 | 3.122 | 5.349 | 2.905 | 5.490 |
| 28.0 | 4.774 | 5.012 | 4.474 | 5.179 | 4.187 | 5.344 | 3.912 | 5.506 | 3.651 | 5.666 | 3.401 | 5.822 | 3.165 | 5.974 |
| 30.0 | 5.172 | 5.430 | 4.848 | 5.610 | 4.538 | 5.789 | 4.241 | 5.964 | 3.957 | 6.136 | 3.688 | 6.305 | 3.431 | 6.470 |
| 32.0 | 5.581 | 5.858 | 5.232 | 6.052 | 4.897 | 6.244 | 4.577 | 6.433 | 4.272 | 6.618 | 3.981 | 6.800 | 3.705 | 6.977 |
| 34.0 | 6.006 | 6.297 | 5.625 | 6.505 | 5.266 | 6.711 | 4.923 | 6.913 | 4.595 | 7.112 | 4.283 | 7.306 | 3.986 | 7.496 |
| 36.0 | 6.429 | 6.748 | 6.029 | 6.970 | 5.645 | 7.189 | 5.278 | 7.406 | 4.927 | 7.618 | 4.593 | 7.826 | 4.275 | 8.028 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 7.5 YEARS ( 7 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 7.5 ANS ( 7 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year

Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| | 1 | | (3) | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant |
| 0.2 | 0.026 | 0.027 | 0.024 | 0.028 | 0.022 | 0.028 | 0.020 | 0.029 | 0.019 | 0.029 | 0.017 | 0.030 | 0.016 | 0.030 |
| 0.4 | 0.051 | 0.054 | 0.048 | 0.055 | 0.044 | 0.057 | 0.041 | 0.058 | 0.037 | 0.059 | 0.034 | 0.060 | 0.032 | 0.060 |
| 0.6 | 0.077 | 0.081 | 0.072 | 0.083 | 0.066 | 0.085 | 0.061 | 0.087 | 0.056 | 0.088 | 0.052 | 0.089 | 0.047 | 0.091 |
| 0.8 | 0.103 | 0.108 | 0.095 | 0.111 | 0.088 | 0.113 | 0.081 | 0.115 | 0.075 | 0.118 | 0.069 | 0.119 | 0.063 | 0.121 |
| 1.0 | 0.129 | 0.136 | 0.119 | 0.139 | 0.110 | 0.142 | 0.102 | 0.144 | 0.094 | 0.147 | 0.086 | 0.149 | 0.079 | 0.151 |
| 1.5 | 0.194 | 0.204 | 0.180 | 0.209 | 0.166 | 0.213 | 0.153 | 0.217 | 0.141 | 0.221 | 0.130 | 0.225 | 0.119 | 0.228 |
| 2.0 | 0.259 | 0.272 | 0.240 | 0.279 | 0.222 | 0.285 | 0.205 | 0.290 | 0.188 | 0.295 | 0.173 | 0.300 | 0.159 | 0.304 |
| 2.5 | 0.325 | 0.341 | 0.301 | 0.349 | 0.278 | 0.357 | 0.256 | 0.364 | 0.236 | 0.370 | 0.217 | 0.376 | 0.199 | 0.381 |
| 3.0 | 0.390 | 0.410 | 0.361 | 0.420 | 0.334 | 0.429 | 0.308 | 0.437 | 0.284 | 0.445 | 0.261 | 0.452 | 0.240 | 0.458 |
| 3.5 | 0.456 | 0.480 | 0.423 | 0.491 | 0.391 | 0.501 | 0.361 | 0.511 | 0.332 | 0.520 | 0.305 | 0.528 | 0.280 | 0.536 |
| 4.0 | 0.523 | 0.549 | 0.484 | 0.562 | 0.448 | 0.574 | 0.413 | 0.586 | 0.380 | 0.596 | 0.350 | 0.605 | 0.321 | 0.614 |
| 4.5 | 0.589 | 0.620 | 0.546 | 0.634 | 0.505 | 0.648 | 0.466 | 0.660 | 0.429 | 0.672 | 0.394 | 0.682 | 0.362 | 0.692 |
| 5.0 | 0.656 | 0.690 | 0.608 | 0.706 | 0.562 | 0.721 | 0.519 | 0.735 | 0.478 | 0.748 | 0.439 | 0.760 | 0.403 | 0.771 |
| 5.5 | 0.724 | 0.761 | 0.670 | 0.778 | 0.620 | 0.795 | 0.572 | 0.811 | 0.527 | 0.825 | 0.484 | 0.838 | 0.444 | 0.850 |
| 6.0 | 0.791 | 0.832 | 0.733 | 0.851 | 0.678 | 0.869 | 0.625 | 0.886 | 0.576 | 0.902 | 0.530 | 0.916 | 0.486 | 0.929 |
| 6.5 | 0.859 | 0.903 | 0.796 | 0.924 | 0.736 | 0.944 | 0.679 | 0.962 | 0.625 | 0.979 | 0.575 | 0.995 | 0.528 | 1.008 |
| 7.0 | 0.927 | 0.975 | 0.859 | 0.997 | 0.794 | 1.019 | 0.733 | 1.039 | 0.675 | 1.057 | 0.621 | 1.074 | 0.570 | 1.089 |
| 7.5 | 0.996 | 1.047 | 0.923 | 1.071 | 0.853 | 1.094 | 0.787 | 1.115 | 0.725 | 1.135 | 0.667 | 1.153 | 0.612 | 1.169 |
| 8.0 | 1.065 | 1.119 | 0.986 | 1.145 | 0.912 | 1.170 | 0.842 | 1.192 | 0.775 | 1.213 | 0.713 | 1.233 | 0.654 | 1.250 |
| 9.0 | 1.204 | 1.265 | 1.115 | 1.294 | 1.031 | 1.322 | 0.952 | 1.348 | 0.877 | 1.371 | 0.806 | 1.393 | 0.740 | 1.412 |
| 10.0 | 1.344 | 1.412 | 1.245 | 1.445 | 1.151 | 1.476 | 1.062 | 1.504 | 0.979 | 1.531 | 0.900 | 1.555 | 0.826 | 1.576 |
| 11.0 | 1.485 | 1.561 | 1.376 | 1.597 | 1.272 | 1.631 | 1.174 | 1.663 | 1.082 | 1.692 | 0.995 | 1.718 | 0.913 | 1.742 |
| 12.0 | 1.628 | 1.711 | 1.508 | 1.750 | 1.395 | 1.788 | 1.288 | 1.822 | 1.186 | 1.854 | 1.091 | 1.883 | 1.001 | 1.909 |
| 13.0 | 1.772 | 1.862 | 1.642 | 1.905 | 1.519 | 1.946 | 1.402 | 1.984 | 1.292 | 2.018 | 1.188 | 2.050 | 1.090 | 2.078 |
| 14.0 | 1.918 | 2.015 | 1.777 | 2.062 | 1.644 | 2.106 | 1.517 | 2.146 | 1.398 | 2.184 | 1.286 | 2.218 | 1.180 | 2.249 |
| 15.0 | 2.065 | 2.170 | 1.914 | 2.220 | 1.770 | 2.267 | 1.634 | 2.311 | 1.506 | 2.351 | 1.385 | 2.388 | 1.271 | 2.421 |
| 16.0 | 2.214 | 2.326 | 2.052 | 2.380 | 1.898 | 2.430 | 1.752 | 2.477 | 1.615 | 2.520 | 1.485 | 2.560 | 1.363 | 2.595 |
| 17.0 | 2.364 | 2.484 | 2.191 | 2.541 | 2.027 | 2.595 | 1.871 | 2.645 | 1.724 | 2.691 | 1.586 | 2.733 | 1.456 | 2.771 |
| 18.0 | 2.516 | 2.643 | 2.332 | 2.704 | 2.157 | 2.761 | 1.992 | 2.815 | 1.836 | 2.864 | 1.689 | 2.908 | 1.550 | 2.949 |
| 19.0 | 2.669 | 2.804 | 2.474 | 2.869 | 2.289 | 2.930 | 2.114 | 2.986 | 1.948 | 3.038 | 1.792 | 3.086 | 1.645 | 3.128 |
| 20.0 | 2.824 | 2.967 | 2.618 | 3.035 | 2.422 | 3.100 | 2.237 | 3.159 | 2.062 | 3.214 | 1.897 | 3.264 | 1.742 | 3.309 |
| 22.0 | 3.146 | 3.298 | 2.911 | 3.374 | 2.693 | 3.445 | 2.487 | 3.511 | 2.293 | 3.572 | 2.110 | 3.628 | 1.937 | 3.678 |
| 24.0 | 3.462 | 3.637 | 3.210 | 3.720 | 2.971 | 3.798 | 2.744 | 3.871 | 2.530 | 3.938 | 2.327 | 4.000 | 2.138 | 4.054 |
| 26.0 | 3.792 | 3.983 | 3.517 | 4.074 | 3.255 | 4.160 | 3.007 | 4.239 | 2.772 | 4.313 | 2.551 | 4.380 | 2.343 | 4.440 |
| 28.0 | 4.136 | 4.337 | 3.830 | 4.436 | 3.546 | 4.530 | 3.276 | 4.616 | 3.020 | 4.696 | 2.780 | 4.768 | 2.553 | 4.834 |
| 30.0 | 4.474 | 4.700 | 4.152 | 4.808 | 3.844 | 4.908 | 3.551 | 5.002 | 3.275 | 5.088 | 3.014 | 5.167 | 2.769 | 5.237 |
| 32.0 | 4.831 | 5.072 | 4.482 | 5.188 | 4.150 | 5.296 | 3.834 | 5.397 | 3.536 | 5.490 | 3.255 | 5.575 | 2.991 | 5.650 |
| 34.0 | 5.195 | 5.454 | 4.820 | 5.578 | 4.464 | 5.695 | 4.125 | 5.803 | 3.805 | 5.902 | 3.503 | 5.993 | 3.219 | 6.074 |
| 36.0 | 5.560 | 5.846 | 5.168 | 5.979 | 4.786 | 6.103 | 4.424 | 6.219 | 4.081 | 6.325 | 3.757 | 6.422 | 3.453 | 6.509 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 8.5 YEARS ( 8 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 8.5 ANS ( 8 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year
Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant |
| 0.2 | 0.023 | 0.024 | 0.021 | 0.024 | 0.019 | 0.024 | 0.017 | 0.024 | 0.016 | 0.025 | 0.014 | 0.025 | 0.013 | 0.025 |
| 0.4 | 0.045 | 0.047 | 0.041 | 0.048 | 0.038 | 0.049 | 0.035 | 0.049 | 0.031 | 0.049 | 0.028 | 0.040 | 0.026 | 0.049 |
| 0.6 | 0.068 | 0.071 | 0.062 | 0.072 | 0.057 | 0.073 | 0.052 | 0.074 | 0.047 | 0.074 | 0.043 | 0.074 | 0.039 | 0.074 |
| 0.8 | 0.090 | 0.095 | 0.083 | 0.096 | 0.076 | 0.097 | 0.069 | 0.098 | 0.063 | 0.099 | 0.057 | 0.099 | 0.052 | 0.099 |
| 1.0 | 0.113 | 0.119 | 0.104 | 0.121 | 0.095 | 0.122 | 0.086 | 0.123 | 0.079 | 0.123 | 0.071 | 0.124 | 0.065 | 0.124 |
| 1.5 | 0.170 | 0.179 | 0.156 | 0.181 | 0.143 | 0.183 | 0.130 | 0.184 | 0.118 | 0.185 | 0.107 | 0.186 | 0.097 | 0.186 |
| 2.0 | 0.227 | 0.239 | 0.208 | 0.242 | 0.191 | 0.245 | 0.174 | 0.247 | 0.158 | 0.248 | 0.144 | 0.240 | 0.130 | 0.249 |
| 2.5 | 0.285 | 0.300 | 0.261 | 0.303 | 0.239 | 0.306 | 0.218 | 0.309 | 0.198 | 0.311 | 0.180 | 0.311 | 0.163 | 0.312 |
| 3.0 | 0.343 | 0.360 | 0.314 | 0.365 | 0.287 | 0.369 | 0.262 | 0.371 | 0.238 | 0.373 | 0.216 | 0.375 | 0.196 | 0.375 |
| 3.5 | 0.401 | 0.421 | 0.367 | 0.427 | 0.336 | 0.431 | 0.306 | 0.434 | 0.279 | 0.437 | 0.253 | 0.438 | 0.229 | 0.438 |
| 4.0 | 0.450 | 0.483 | 0.421 | 0.489 | 0.385 | 0.494 | 0.351 | 0.498 | 0.319 | 0.500 | 0.290 | 0.502 | 0.262 | 0.502 |
| 4.5 | 0.518 | 0.544 | 0.474 | 0.551 | 0.434 | 0.557 | 0.396 | 0.561 | 0.360 | 0.564 | 0.327 | 0.566 | 0.296 | 0.566 |
| 5.0 | 0.576 | 0.606 | 0.528 | 0.614 | 0.483 | 0.620 | 0.441 | 0.625 | 0.401 | 0.628 | 0.364 | 0.630 | 0.330 | 0.631 |
| 5.5 | 0.634 | 0.668 | 0.583 | 0.677 | 0.533 | 0.683 | 0.486 | 0.689 | 0.442 | 0.693 | 0.401 | 0.695 | 0.364 | 0.695 |
| 6.0 | 0.695 | 0.731 | 0.637 | 0.740 | 0.582 | 0.747 | 0.531 | 0.753 | 0.483 | 0.757 | 0.439 | 0.760 | 0.398 | 0.760 |
| 6.5 | 0.755 | 0.793 | 0.692 | 0.803 | 0.633 | 0.811 | 0.577 | 0.818 | 0.525 | 0.822 | 0.477 | 0.825 | 0.432 | 0.825 |
| 7.0 | 0.815 | 0.856 | 0.747 | 0.867 | 0.683 | 0.876 | 0.623 | 0.883 | 0.567 | 0.888 | 0.515 | 0.890 | 0.466 | 0.891 |
| 7.5 | 0.875 | 0.920 | 0.802 | 0.931 | 0.733 | 0.941 | 0.669 | 0.948 | 0.609 | 0.953 | 0.553 | 0.956 | 0.501 | 0.957 |
| 8.0 | 0.935 | 0.983 | 0.857 | 0.996 | 0.784 | 1.006 | 0.715 | 1.014 | 0.651 | 1.019 | 0.591 | 1.022 | 0.535 | 1.023 |
| 9.0 | 1.057 | 1.111 | 0.969 | 1.125 | 0.886 | 1.137 | 0.809 | 1.146 | 0.736 | 1.152 | 0.668 | 1.155 | 0.605 | 1.156 |
| 10.0 | 1.181 | 1.241 | 1.082 | 1.256 | 0.990 | 1.269 | 0.903 | 1.279 | 0.822 | 1.286 | 0.746 | 1.290 | 0.676 | 1.291 |
| 11.0 | 1.305 | 1.371 | 1.196 | 1.389 | 1.094 | 1.403 | 0.998 | 1.414 | 0.909 | 1.421 | 0.825 | 1.426 | 0.747 | 1.427 |
| 12.0 | 1.431 | 1.503 | 1.312 | 1.522 | 1.200 | 1.538 | 1.095 | 1.550 | 0.996 | 1.558 | 0.905 | 1.563 | 0.820 | 1.564 |
| 13.0 | 1.557 | 1.637 | 1.428 | 1.657 | 1.306 | 1.674 | 1.192 | 1.687 | 1.085 | 1.696 | 0.985 | 1.701 | 0.893 | 1.703 |
| 14.0 | 1.684 | 1.771 | 1.546 | 1.794 | 1.414 | 1.812 | 1.290 | 1.826 | 1.174 | 1.836 | 1.067 | 1.841 | 0.964 | 1.843 |
| 15.0 | 1.815 | 1.907 | 1.665 | 1.931 | 1.523 | 1.951 | 1.390 | 1.966 | 1.265 | 1.977 | 1.149 | 1.983 | 1.041 | 1.984 |
| 16.0 | 1.944 | 2.045 | 1.785 | 2.070 | 1.633 | 2.091 | 1.490 | 2.108 | 1.356 | 2.119 | 1.232 | 2.126 | 1.116 | 2.127 |
| 17.0 | 2.078 | 2.184 | 1.906 | 2.211 | 1.744 | 2.234 | 1.591 | 2.251 | 1.449 | 2.263 | 1.316 | 2.270 | 1.192 | 2.272 |
| 18.0 | 2.212 | 2.324 | 2.029 | 2.353 | 1.856 | 2.377 | 1.694 | 2.395 | 1.542 | 2.408 | 1.401 | 2.416 | 1.270 | 2.418 |
| 19.0 | 2.347 | 2.466 | 2.153 | 2.497 | 1.970 | 2.522 | 1.798 | 2.542 | 1.637 | 2.555 | 1.487 | 2.563 | 1.347 | 2.565 |
| 20.0 | 2.484 | 2.610 | 2.278 | 2.642 | 2.085 | 2.669 | 1.903 | 2.690 | 1.733 | 2.704 | 1.574 | 2.712 | 1.426 | 2.714 |
| 22.0 | 2.762 | 2.901 | 2.534 | 2.937 | 2.318 | 2.967 | 2.116 | 2.990 | 1.927 | 3.006 | 1.751 | 3.015 | 1.587 | 3.018 |
| 24.0 | 3.046 | 3.200 | 2.795 | 3.240 | 2.558 | 3.272 | 2.335 | 3.297 | 2.127 | 3.315 | 1.932 | 3.325 | 1.751 | 3.328 |
| 26.0 | 3.337 | 3.505 | 3.062 | 3.549 | 2.803 | 3.584 | 2.559 | 3.612 | 2.331 | 3.631 | 2.118 | 3.642 | 1.920 | 3.645 |
| 28.0 | 3.635 | 3.818 | 3.336 | 3.865 | 3.054 | 3.904 | 2.789 | 3.934 | 2.540 | 3.955 | 2.308 | 3.967 | 2.093 | 3.970 |
| 30.0 | 3.941 | 4.138 | 3.617 | 4.190 | 3.311 | 4.232 | 3.024 | 4.254 | 2.755 | 4.287 | 2.504 | 4.300 | 2.270 | 4.303 |
| 32.0 | 4.254 | 4.467 | 3.905 | 4.522 | 3.576 | 4.568 | 3.266 | 4.603 | 2.976 | 4.627 | 2.705 | 4.641 | 2.452 | 4.645 |
| 34.0 | 4.576 | 4.804 | 4.201 | 4.864 | 3.847 | 4.912 | 3.514 | 4.950 | 3.202 | 4.976 | 2.911 | 4.991 | 2.640 | 4.995 |
| 36.0 | 4.906 | 5.151 | 4.505 | 5.215 | 4.126 | 5.267 | 3.770 | 5.307 | 3.435 | 5.335 | 3.123 | 5.351 | 2.832 | 5.355 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 9.5 YEARS ( 9 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 9.5 ANS ( 9 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year

Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant | Risk this year / Risque cette année-là | Risk 5 years ago / Risque 5 ans auparavant |
| 0.2 | 0.020 | 0.021 | 0.018 | 0.021 | 0.016 | 0.021 | 0.015 | 0.021 | 0.013 | 0.021 | 0.012 | 0.021 | 0.011 | 0.020 |
| 0.4 | 0.040 | 0.042 | 0.036 | 0.042 | 0.033 | 0.042 | 0.030 | 0.042 | 0.027 | 0.042 | 0.024 | 0.041 | 0.021 | 0.041 |
| 0.6 | 0.060 | 0.063 | 0.055 | 0.064 | 0.049 | 0.064 | 0.045 | 0.063 | 0.040 | 0.063 | 0.036 | 0.062 | 0.032 | 0.061 |
| 0.8 | 0.081 | 0.085 | 0.073 | 0.085 | 0.066 | 0.085 | 0.060 | 0.084 | 0.053 | 0.084 | 0.048 | 0.083 | 0.043 | 0.082 |
| 1.0 | 0.101 | 0.106 | 0.091 | 0.106 | 0.083 | 0.106 | 0.074 | 0.106 | 0.067 | 0.105 | 0.060 | 0.104 | 0.054 | 0.103 |
| 1.5 | 0.152 | 0.159 | 0.137 | 0.160 | 0.124 | 0.159 | 0.112 | 0.159 | 0.101 | 0.158 | 0.090 | 0.156 | 0.081 | 0.154 |
| 2.0 | 0.203 | 0.213 | 0.184 | 0.213 | 0.166 | 0.213 | 0.150 | 0.212 | 0.134 | 0.211 | 0.120 | 0.209 | 0.108 | 0.206 |
| 2.5 | 0.254 | 0.267 | 0.230 | 0.267 | 0.208 | 0.267 | 0.187 | 0.266 | 0.168 | 0.264 | 0.151 | 0.262 | 0.135 | 0.258 |
| 3.0 | 0.305 | 0.321 | 0.277 | 0.321 | 0.250 | 0.321 | 0.225 | 0.320 | 0.203 | 0.318 | 0.182 | 0.315 | 0.162 | 0.311 |
| 3.5 | 0.357 | 0.375 | 0.324 | 0.376 | 0.293 | 0.375 | 0.264 | 0.374 | 0.237 | 0.371 | 0.212 | 0.368 | 0.190 | 0.363 |
| 4.0 | 0.408 | 0.430 | 0.371 | 0.431 | 0.335 | 0.430 | 0.302 | 0.428 | 0.272 | 0.425 | 0.243 | 0.421 | 0.217 | 0.416 |
| 4.5 | 0.461 | 0.485 | 0.418 | 0.485 | 0.378 | 0.485 | 0.341 | 0.483 | 0.306 | 0.480 | 0.274 | 0.475 | 0.245 | 0.469 |
| 5.0 | 0.513 | 0.540 | 0.466 | 0.541 | 0.421 | 0.540 | 0.379 | 0.538 | 0.341 | 0.534 | 0.306 | 0.529 | 0.273 | 0.522 |
| 5.5 | 0.566 | 0.595 | 0.513 | 0.596 | 0.464 | 0.596 | 0.418 | 0.593 | 0.376 | 0.589 | 0.337 | 0.583 | 0.301 | 0.576 |
| 6.0 | 0.619 | 0.651 | 0.561 | 0.652 | 0.508 | 0.651 | 0.458 | 0.649 | 0.411 | 0.644 | 0.369 | 0.638 | 0.329 | 0.630 |
| 6.5 | 0.672 | 0.706 | 0.610 | 0.708 | 0.551 | 0.707 | 0.497 | 0.704 | 0.447 | 0.700 | 0.400 | 0.693 | 0.358 | 0.684 |
| 7.0 | 0.726 | 0.763 | 0.658 | 0.764 | 0.595 | 0.763 | 0.536 | 0.760 | 0.482 | 0.755 | 0.432 | 0.748 | 0.386 | 0.738 |
| 7.5 | 0.779 | 0.819 | 0.707 | 0.821 | 0.639 | 0.820 | 0.576 | 0.817 | 0.518 | 0.811 | 0.464 | 0.803 | 0.415 | 0.793 |
| 8.0 | 0.833 | 0.876 | 0.756 | 0.877 | 0.683 | 0.877 | 0.616 | 0.873 | 0.554 | 0.867 | 0.496 | 0.859 | 0.444 | 0.848 |
| 9.0 | 0.942 | 0.990 | 0.854 | 0.992 | 0.773 | 0.991 | 0.697 | 0.987 | 0.626 | 0.980 | 0.561 | 0.971 | 0.502 | 0.959 |
| 10.0 | 1.052 | 1.105 | 0.954 | 1.107 | 0.863 | 1.106 | 0.778 | 1.102 | 0.699 | 1.094 | 0.627 | 1.084 | 0.560 | 1.070 |
| 11.0 | 1.163 | 1.222 | 1.055 | 1.224 | 0.954 | 1.223 | 0.860 | 1.218 | 0.773 | 1.210 | 0.693 | 1.198 | 0.619 | 1.183 |
| 12.0 | 1.275 | 1.339 | 1.156 | 1.342 | 1.046 | 1.341 | 0.943 | 1.335 | 0.848 | 1.326 | 0.760 | 1.313 | 0.679 | 1.297 |
| 13.0 | 1.388 | 1.458 | 1.259 | 1.461 | 1.139 | 1.460 | 1.027 | 1.454 | 0.923 | 1.444 | 0.828 | 1.430 | 0.740 | 1.412 |
| 14.0 | 1.502 | 1.578 | 1.363 | 1.582 | 1.233 | 1.580 | 1.112 | 1.574 | 0.999 | 1.563 | 0.896 | 1.548 | 0.801 | 1.528 |
| 15.0 | 1.618 | 1.700 | 1.468 | 1.703 | 1.328 | 1.701 | 1.197 | 1.695 | 1.077 | 1.683 | 0.965 | 1.667 | 0.863 | 1.646 |
| 16.0 | 1.734 | 1.822 | 1.574 | 1.826 | 1.424 | 1.824 | 1.284 | 1.817 | 1.154 | 1.805 | 1.035 | 1.787 | 0.925 | 1.765 |
| 17.0 | 1.852 | 1.946 | 1.681 | 1.950 | 1.521 | 1.948 | 1.371 | 1.941 | 1.233 | 1.927 | 1.106 | 1.909 | 0.988 | 1.885 |
| 18.0 | 1.972 | 2.072 | 1.789 | 2.076 | 1.619 | 2.074 | 1.460 | 2.066 | 1.313 | 2.051 | 1.177 | 2.032 | 1.052 | 2.006 |
| 19.0 | 2.092 | 2.198 | 1.899 | 2.203 | 1.718 | 2.200 | 1.550 | 2.192 | 1.394 | 2.177 | 1.250 | 2.156 | 1.117 | 2.129 |
| 20.0 | 2.214 | 2.326 | 2.010 | 2.331 | 1.818 | 2.329 | 1.640 | 2.320 | 1.475 | 2.304 | 1.323 | 2.281 | 1.183 | 2.253 |
| 22.0 | 2.462 | 2.587 | 2.235 | 2.592 | 2.022 | 2.589 | 1.825 | 2.579 | 1.641 | 2.562 | 1.472 | 2.537 | 1.316 | 2.505 |
| 24.0 | 2.716 | 2.853 | 2.466 | 2.859 | 2.232 | 2.856 | 2.013 | 2.845 | 1.811 | 2.826 | 1.624 | 2.799 | 1.452 | 2.764 |
| 26.0 | 2.974 | 3.126 | 2.702 | 3.132 | 2.446 | 3.129 | 2.207 | 3.117 | 1.985 | 3.096 | 1.781 | 3.066 | 1.592 | 3.028 |
| 28.0 | 3.243 | 3.406 | 2.944 | 3.413 | 2.665 | 3.409 | 2.405 | 3.396 | 2.164 | 3.373 | 1.941 | 3.341 | 1.736 | 3.299 |
| 30.0 | 3.516 | 3.693 | 3.193 | 3.700 | 2.891 | 3.696 | 2.609 | 3.682 | 2.347 | 3.657 | 2.106 | 3.622 | 1.884 | 3.577 |
| 32.0 | 3.796 | 3.987 | 3.448 | 3.994 | 3.122 | 3.990 | 2.818 | 3.975 | 2.536 | 3.948 | 2.275 | 3.910 | 2.035 | 3.862 |
| 34.0 | 4.084 | 4.288 | 3.710 | 4.297 | 3.359 | 4.293 | 3.033 | 4.276 | 2.729 | 4.247 | 2.449 | 4.207 | 2.191 | 4.155 |
| 36.0 | 4.376 | 4.599 | 3.979 | 4.608 | 3.604 | 4.603 | 3.254 | 4.585 | 2.928 | 4.554 | 2.628 | 4.511 | 2.351 | 4.455 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 10.5 YEARS ( 10 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 10.5 ANS ( 10 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year

Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant |
| 1.0 | 0.091 | 0.100 | 0.081 | 0.110 | 0.073 | 0.120 | 0.065 | 0.130 | 0.057 | 0.141 | 0.051 | 0.153 | 0.045 | 0.164 |
| 1.5 | 0.136 | 0.151 | 0.122 | 0.165 | 0.109 | 0.180 | 0.097 | 0.196 | 0.086 | 0.212 | 0.076 | 0.229 | 0.067 | 0.247 |
| 2.0 | 0.182 | 0.201 | 0.164 | 0.221 | 0.146 | 0.241 | 0.130 | 0.262 | 0.116 | 0.284 | 0.102 | 0.307 | 0.090 | 0.330 |
| 2.5 | 0.228 | 0.252 | 0.205 | 0.277 | 0.183 | 0.302 | 0.163 | 0.328 | 0.145 | 0.356 | 0.128 | 0.384 | 0.113 | 0.413 |
| 3.0 | 0.275 | 0.304 | 0.246 | 0.333 | 0.220 | 0.363 | 0.196 | 0.395 | 0.174 | 0.428 | 0.154 | 0.462 | 0.136 | 0.497 |
| 3.5 | 0.321 | 0.355 | 0.288 | 0.389 | 0.258 | 0.424 | 0.229 | 0.462 | 0.204 | 0.500 | 0.180 | 0.540 | 0.159 | 0.581 |
| 4.0 | 0.368 | 0.407 | 0.330 | 0.445 | 0.295 | 0.486 | 0.263 | 0.529 | 0.233 | 0.573 | 0.206 | 0.619 | 0.182 | 0.666 |
| 4.5 | 0.415 | 0.459 | 0.372 | 0.502 | 0.333 | 0.548 | 0.296 | 0.596 | 0.263 | 0.646 | 0.233 | 0.697 | 0.205 | 0.750 |
| 5.0 | 0.462 | 0.511 | 0.415 | 0.559 | 0.371 | 0.611 | 0.330 | 0.664 | 0.293 | 0.719 | 0.259 | 0.777 | 0.228 | 0.836 |
| 5.5 | 0.510 | 0.563 | 0.457 | 0.617 | 0.409 | 0.673 | 0.364 | 0.732 | 0.323 | 0.793 | 0.286 | 0.856 | 0.252 | 0.921 |
| 6.0 | 0.557 | 0.616 | 0.500 | 0.674 | 0.447 | 0.736 | 0.398 | 0.800 | 0.353 | 0.867 | 0.313 | 0.936 | 0.275 | 1.007 |
| 6.5 | 0.605 | 0.669 | 0.543 | 0.732 | 0.486 | 0.799 | 0.432 | 0.869 | 0.384 | 0.941 | 0.339 | 1.016 | 0.299 | 1.094 |
| 7.0 | 0.653 | 0.722 | 0.586 | 0.791 | 0.524 | 0.863 | 0.467 | 0.938 | 0.414 | 1.016 | 0.367 | 1.097 | 0.323 | 1.180 |
| 7.5 | 0.702 | 0.775 | 0.630 | 0.849 | 0.563 | 0.926 | 0.501 | 1.007 | 0.445 | 1.091 | 0.394 | 1.178 | 0.347 | 1.267 |
| 8.0 | 0.750 | 0.829 | 0.673 | 0.908 | 0.602 | 0.991 | 0.536 | 1.077 | 0.476 | 1.167 | 0.421 | 1.259 | 0.371 | 1.355 |
| 9.0 | 0.848 | 0.937 | 0.761 | 1.026 | 0.681 | 1.120 | 0.606 | 1.217 | 0.538 | 1.319 | 0.476 | 1.423 | 0.420 | 1.531 |
| 10.0 | 0.947 | 1.046 | 0.850 | 1.146 | 0.760 | 1.250 | 0.677 | 1.359 | 0.601 | 1.472 | 0.532 | 1.589 | 0.469 | 1.709 |
| 11.0 | 1.047 | 1.157 | 0.940 | 1.266 | 0.840 | 1.382 | 0.749 | 1.502 | 0.665 | 1.627 | 0.588 | 1.756 | 0.518 | 1.888 |
| 12.0 | 1.148 | 1.268 | 1.030 | 1.388 | 0.921 | 1.515 | 0.821 | 1.646 | 0.729 | 1.783 | 0.645 | 1.924 | 0.568 | 2.070 |
| 13.0 | 1.250 | 1.381 | 1.122 | 1.512 | 1.003 | 1.649 | 0.894 | 1.792 | 0.794 | 1.941 | 0.702 | 2.095 | 0.619 | 2.253 |
| 14.0 | 1.353 | 1.494 | 1.215 | 1.636 | 1.086 | 1.785 | 0.968 | 1.940 | 0.859 | 2.100 | 0.760 | 2.266 | 0.670 | 2.437 |
| 15.0 | 1.457 | 1.609 | 1.308 | 1.762 | 1.170 | 1.922 | 1.043 | 2.088 | 0.926 | 2.261 | 0.819 | 2.440 | 0.722 | 2.624 |
| 16.0 | 1.563 | 1.725 | 1.403 | 1.889 | 1.255 | 2.060 | 1.118 | 2.239 | 0.993 | 2.424 | 0.878 | 2.615 | 0.774 | 2.812 |
| 17.0 | 1.669 | 1.843 | 1.498 | 2.017 | 1.340 | 2.200 | 1.194 | 2.391 | 1.061 | 2.588 | 0.938 | 2.793 | 0.827 | 3.002 |
| 18.0 | 1.777 | 1.962 | 1.595 | 2.147 | 1.427 | 2.342 | 1.272 | 2.544 | 1.129 | 2.754 | 0.999 | 2.971 | 0.881 | 3.194 |
| 19.0 | 1.886 | 2.082 | 1.693 | 2.278 | 1.514 | 2.484 | 1.350 | 2.699 | 1.199 | 2.922 | 1.061 | 3.152 | 0.935 | 3.389 |
| 20.0 | 1.995 | 2.203 | 1.792 | 2.411 | 1.603 | 2.629 | 1.429 | 2.856 | 1.269 | 3.092 | 1.123 | 3.335 | 0.990 | 3.585 |
| 22.0 | 2.218 | 2.450 | 1.993 | 2.681 | 1.783 | 2.923 | 1.589 | 3.175 | 1.412 | 3.437 | 1.249 | 3.706 | 1.102 | 3.983 |
| 24.0 | 2.448 | 2.702 | 2.199 | 2.957 | 1.968 | 3.223 | 1.754 | 3.501 | 1.558 | 3.789 | 1.379 | 4.086 | 1.216 | 4.390 |
| 26.0 | 2.683 | 2.961 | 2.410 | 3.240 | 2.157 | 3.531 | 1.923 | 3.835 | 1.708 | 4.149 | 1.512 | 4.474 | 1.334 | 4.807 |
| 28.0 | 2.924 | 3.226 | 2.627 | 3.529 | 2.351 | 3.846 | 2.096 | 4.176 | 1.862 | 4.518 | 1.648 | 4.871 | 1.454 | 5.232 |
| 30.0 | 3.170 | 3.498 | 2.849 | 3.826 | 2.550 | 4.169 | 2.274 | 4.526 | 2.020 | 4.896 | 1.788 | 5.277 | 1.578 | 5.668 |
| 32.0 | 3.424 | 3.777 | 3.076 | 4.130 | 2.754 | 4.500 | 2.456 | 4.885 | 2.183 | 5.283 | 1.932 | 5.694 | 1.705 | 6.114 |
| 34.0 | 3.684 | 4.063 | 3.311 | 4.443 | 2.964 | 4.840 | 2.644 | 5.253 | 2.350 | 5.680 | 2.080 | 6.121 | 1.836 | 6.572 |
| 36.0 | 3.951 | 4.357 | 3.551 | 4.764 | 3.180 | 5.189 | 2.837 | 5.631 | 2.521 | 6.088 | 2.233 | 6.559 | 1.970 | 7.041 |
| 38.0 | 4.226 | 4.660 | 3.799 | 5.094 | 3.402 | 5.548 | 3.036 | 6.019 | 2.698 | 6.507 | 2.390 | 7.009 | 2.109 | 7.523 |
| 40.0 | 4.500 | 4.971 | 4.054 | 5.434 | 3.632 | 5.917 | 3.241 | 6.418 | 2.881 | 6.937 | 2.552 | 7.471 | 2.252 | 8.017 |
| 45.0 | 5.257 | 5.793 | 4.728 | 6.329 | 4.237 | 6.889 | 3.782 | 7.470 | 3.363 | 8.070 | 2.980 | 8.687 | 2.630 | 9.317 |
| 50.0 | 6.060 | 6.685 | 5.461 | 7.301 | 4.896 | 7.943 | 4.372 | 8.608 | 3.889 | 9.295 | 3.446 | 10.00 | 3.043 | 10.72 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 11.5 YEARS ( 11 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 11.5 ANS ( 11 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year
Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant |
| 1.0 | 0.082 | 0.091 | 0.073 | 0.099 | 0.065 | 0.107 | 0.057 | 0.114 | 0.050 | 0.122 | 0.043 | 0.131 | 0.038 | 0.138 |
| 1.5 | 0.124 | 0.137 | 0.110 | 0.148 | 0.097 | 0.160 | 0.086 | 0.172 | 0.075 | 0.184 | 0.065 | 0.196 | 0.057 | 0.208 |
| 2.0 | 0.166 | 0.183 | 0.147 | 0.198 | 0.130 | 0.214 | 0.114 | 0.230 | 0.100 | 0.246 | 0.087 | 0.262 | 0.076 | 0.278 |
| 2.5 | 0.208 | 0.229 | 0.184 | 0.249 | 0.163 | 0.268 | 0.143 | 0.288 | 0.125 | 0.308 | 0.109 | 0.328 | 0.095 | 0.348 |
| 3.0 | 0.250 | 0.276 | 0.222 | 0.299 | 0.196 | 0.323 | 0.172 | 0.347 | 0.151 | 0.371 | 0.132 | 0.395 | 0.114 | 0.419 |
| 3.5 | 0.292 | 0.323 | 0.259 | 0.350 | 0.229 | 0.377 | 0.201 | 0.405 | 0.176 | 0.434 | 0.154 | 0.462 | 0.134 | 0.490 |
| 4.0 | 0.334 | 0.369 | 0.297 | 0.400 | 0.262 | 0.432 | 0.231 | 0.464 | 0.202 | 0.497 | 0.176 | 0.529 | 0.153 | 0.561 |
| 4.5 | 0.377 | 0.417 | 0.335 | 0.452 | 0.296 | 0.487 | 0.260 | 0.523 | 0.228 | 0.560 | 0.199 | 0.597 | 0.173 | 0.633 |
| 5.0 | 0.420 | 0.464 | 0.373 | 0.503 | 0.329 | 0.543 | 0.290 | 0.583 | 0.254 | 0.624 | 0.222 | 0.664 | 0.193 | 0.705 |
| 5.5 | 0.463 | 0.512 | 0.411 | 0.555 | 0.363 | 0.598 | 0.320 | 0.643 | 0.280 | 0.688 | 0.244 | 0.732 | 0.212 | 0.777 |
| 6.0 | 0.506 | 0.560 | 0.450 | 0.606 | 0.397 | 0.654 | 0.350 | 0.703 | 0.306 | 0.752 | 0.267 | 0.801 | 0.232 | 0.850 |
| 6.5 | 0.550 | 0.608 | 0.488 | 0.658 | 0.431 | 0.710 | 0.380 | 0.763 | 0.333 | 0.816 | 0.290 | 0.870 | 0.252 | 0.922 |
| 7.0 | 0.594 | 0.656 | 0.527 | 0.711 | 0.466 | 0.767 | 0.410 | 0.824 | 0.359 | 0.881 | 0.313 | 0.939 | 0.272 | 0.996 |
| 7.5 | 0.638 | 0.704 | 0.566 | 0.763 | 0.500 | 0.824 | 0.440 | 0.885 | 0.386 | 0.946 | 0.337 | 1.008 | 0.293 | 1.069 |
| 8.0 | 0.682 | 0.753 | 0.605 | 0.816 | 0.535 | 0.881 | 0.471 | 0.946 | 0.413 | 1.012 | 0.360 | 1.078 | 0.313 | 1.143 |
| 9.0 | 0.771 | 0.852 | 0.684 | 0.923 | 0.605 | 0.995 | 0.532 | 1.069 | 0.467 | 1.144 | 0.407 | 1.218 | 0.354 | 1.292 |
| 10.0 | 0.861 | 0.951 | 0.764 | 1.030 | 0.676 | 1.111 | 0.595 | 1.194 | 0.521 | 1.277 | 0.455 | 1.360 | 0.395 | 1.442 |
| 11.0 | 0.952 | 1.051 | 0.845 | 1.139 | 0.747 | 1.229 | 0.657 | 1.320 | 0.576 | 1.411 | 0.503 | 1.503 | 0.437 | 1.594 |
| 12.0 | 1.043 | 1.153 | 0.927 | 1.249 | 0.819 | 1.347 | 0.721 | 1.447 | 0.632 | 1.547 | 0.551 | 1.647 | 0.479 | 1.747 |
| 13.0 | 1.136 | 1.255 | 1.009 | 1.360 | 0.892 | 1.466 | 0.785 | 1.575 | 0.688 | 1.684 | 0.601 | 1.793 | 0.522 | 1.902 |
| 14.0 | 1.230 | 1.358 | 1.092 | 1.472 | 0.966 | 1.587 | 0.850 | 1.704 | 0.745 | 1.823 | 0.650 | 1.941 | 0.565 | 2.058 |
| 15.0 | 1.325 | 1.463 | 1.176 | 1.585 | 1.040 | 1.709 | 0.916 | 1.835 | 0.803 | 1.963 | 0.701 | 2.090 | 0.609 | 2.216 |
| 16.0 | 1.420 | 1.569 | 1.262 | 1.699 | 1.116 | 1.832 | 0.982 | 1.968 | 0.861 | 2.104 | 0.751 | 2.240 | 0.653 | 2.375 |
| 17.0 | 1.517 | 1.675 | 1.348 | 1.815 | 1.192 | 1.957 | 1.049 | 2.101 | 0.920 | 2.247 | 0.803 | 2.392 | 0.698 | 2.537 |
| 18.0 | 1.615 | 1.783 | 1.435 | 1.932 | 1.269 | 2.083 | 1.117 | 2.237 | 0.979 | 2.391 | 0.855 | 2.546 | 0.743 | 2.699 |
| 19.0 | 1.714 | 1.893 | 1.523 | 2.050 | 1.347 | 2.210 | 1.186 | 2.373 | 1.039 | 2.537 | 0.907 | 2.701 | 0.789 | 2.864 |
| 20.0 | 1.814 | 2.003 | 1.612 | 2.169 | 1.425 | 2.339 | 1.255 | 2.511 | 1.100 | 2.685 | 0.961 | 2.858 | 0.835 | 3.030 |
| 22.0 | 2.018 | 2.228 | 1.793 | 2.413 | 1.586 | 2.601 | 1.397 | 2.792 | 1.224 | 2.985 | 1.069 | 3.177 | 0.929 | 3.368 |
| 24.0 | 2.227 | 2.458 | 1.979 | 2.661 | 1.750 | 2.869 | 1.541 | 3.080 | 1.352 | 3.292 | 1.180 | 3.503 | 1.026 | 3.714 |
| 26.0 | 2.440 | 2.694 | 2.169 | 2.916 | 1.919 | 3.144 | 1.690 | 3.374 | 1.482 | 3.606 | 1.294 | 3.837 | 1.125 | 4.067 |
| 28.0 | 2.650 | 2.935 | 2.364 | 3.177 | 2.091 | 3.425 | 1.842 | 3.675 | 1.616 | 3.927 | 1.411 | 4.170 | 1.227 | 4.429 |
| 30.0 | 2.884 | 3.183 | 2.564 | 3.445 | 2.269 | 3.713 | 1.999 | 3.984 | 1.753 | 4.257 | 1.531 | 4.529 | 1.331 | 4.799 |
| 32.0 | 3.115 | 3.437 | 2.769 | 3.720 | 2.451 | 4.008 | 2.159 | 4.301 | 1.894 | 4.595 | 1.654 | 4.888 | 1.439 | 5.179 |
| 34.0 | 3.352 | 3.698 | 2.980 | 4.002 | 2.638 | 4.312 | 2.324 | 4.626 | 2.039 | 4.941 | 1.781 | 5.256 | 1.549 | 5.569 |
| 36.0 | 3.596 | 3.966 | 3.198 | 4.292 | 2.831 | 4.624 | 2.494 | 4.960 | 2.189 | 5.297 | 1.912 | 5.634 | 1.663 | 5.968 |
| 38.0 | 3.846 | 4.242 | 3.421 | 4.590 | 3.029 | 4.944 | 2.670 | 5.303 | 2.342 | 5.663 | 2.046 | 6.023 | 1.780 | 6.379 |
| 40.0 | 4.105 | 4.527 | 3.651 | 4.897 | 3.233 | 5.275 | 2.850 | 5.656 | 2.501 | 6.040 | 2.185 | 6.422 | 1.901 | 6.801 |
| 45.0 | 4.787 | 5.277 | 4.260 | 5.707 | 3.773 | 6.145 | 3.327 | 6.587 | 2.921 | 7.032 | 2.553 | 7.474 | 2.222 | 7.913 |
| 50.0 | 5.520 | 6.092 | 4.922 | 6.586 | 4.362 | 7.089 | 3.847 | 7.597 | 3.379 | 8.106 | 2.954 | 8.613 | 2.571 | 9.115 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 12.5 YEARS ( 12 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 12.5 ANS ( 12 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year
Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| Percentage already infected / Pourcentage de sujets déjà infectés | 1: Risk this year / Risque cette année-là | 1: Risk 10 years ago / Risque 10 ans auparavant | 3: Risk this year / Risque cette année-là | 3: Risk 10 years ago / Risque 10 ans auparavant | 5: Risk this year / Risque cette année-là | 5: Risk 10 years ago / Risque 10 ans auparavant | 7: Risk this year / Risque cette année-là | 7: Risk 10 years ago / Risque 10 ans auparavant | 9: Risk this year / Risque cette année-là | 9: Risk 10 years ago / Risque 10 ans auparavant | 11: Risk this year / Risque cette année-là | 11: Risk 10 years ago / Risque 10 ans auparavant | 13: Risk this year / Risque cette année-là | 13: Risk 10 years ago / Risque 10 ans auparavant |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | 0.075 | 0.083 | 0.066 | 0.089 | 0.058 | 0.095 | 0.050 | 0.101 | 0.043 | 0.107 | 0.037 | 0.112 | 0.032 | 0.117 |
| 1.5 | 0.113 | 0.125 | 0.100 | 0.134 | 0.087 | 0.143 | 0.076 | 0.152 | 0.065 | 0.161 | 0.056 | 0.169 | 0.048 | 0.177 |
| 2.0 | 0.152 | 0.168 | 0.133 | 0.180 | 0.116 | 0.192 | 0.101 | 0.203 | 0.087 | 0.215 | 0.075 | 0.226 | 0.064 | 0.236 |
| 2.5 | 0.190 | 0.210 | 0.167 | 0.225 | 0.146 | 0.240 | 0.127 | 0.255 | 0.109 | 0.269 | 0.094 | 0.283 | 0.081 | 0.296 |
| 3.0 | 0.228 | 0.253 | 0.201 | 0.271 | 0.175 | 0.289 | 0.152 | 0.306 | 0.132 | 0.324 | 0.113 | 0.340 | 0.097 | 0.356 |
| 3.5 | 0.267 | 0.295 | 0.235 | 0.317 | 0.205 | 0.338 | 0.178 | 0.358 | 0.154 | 0.378 | 0.133 | 0.398 | 0.113 | 0.416 |
| 4.0 | 0.306 | 0.338 | 0.269 | 0.363 | 0.235 | 0.387 | 0.204 | 0.411 | 0.176 | 0.433 | 0.152 | 0.455 | 0.130 | 0.476 |
| 4.5 | 0.345 | 0.381 | 0.303 | 0.409 | 0.265 | 0.436 | 0.230 | 0.463 | 0.199 | 0.489 | 0.171 | 0.514 | 0.147 | 0.537 |
| 5.0 | 0.384 | 0.425 | 0.338 | 0.455 | 0.295 | 0.486 | 0.256 | 0.516 | 0.222 | 0.544 | 0.191 | 0.572 | 0.163 | 0.598 |
| 5.5 | 0.424 | 0.468 | 0.372 | 0.502 | 0.325 | 0.536 | 0.283 | 0.568 | 0.244 | 0.600 | 0.210 | 0.631 | 0.180 | 0.659 |
| 6.0 | 0.464 | 0.512 | 0.407 | 0.549 | 0.356 | 0.586 | 0.309 | 0.622 | 0.267 | 0.656 | 0.230 | 0.690 | 0.197 | 0.721 |
| 6.5 | 0.503 | 0.556 | 0.442 | 0.596 | 0.386 | 0.636 | 0.336 | 0.675 | 0.290 | 0.713 | 0.250 | 0.749 | 0.214 | 0.783 |
| 7.0 | 0.544 | 0.601 | 0.477 | 0.644 | 0.417 | 0.687 | 0.362 | 0.729 | 0.313 | 0.769 | 0.270 | 0.808 | 0.231 | 0.845 |
| 7.5 | 0.584 | 0.645 | 0.513 | 0.691 | 0.448 | 0.737 | 0.389 | 0.783 | 0.337 | 0.826 | 0.290 | 0.868 | 0.248 | 0.908 |
| 8.0 | 0.624 | 0.690 | 0.548 | 0.739 | 0.479 | 0.789 | 0.416 | 0.837 | 0.360 | 0.883 | 0.310 | 0.928 | 0.265 | 0.970 |
| 9.0 | 0.706 | 0.780 | 0.620 | 0.836 | 0.542 | 0.891 | 0.471 | 0.946 | 0.407 | 0.999 | 0.350 | 1.049 | 0.300 | 1.097 |
| 10.0 | 0.788 | 0.871 | 0.692 | 0.933 | 0.605 | 0.995 | 0.526 | 1.056 | 0.455 | 1.115 | 0.391 | 1.171 | 0.335 | 1.225 |
| 11.0 | 0.871 | 0.963 | 0.765 | 1.032 | 0.669 | 1.100 | 0.581 | 1.167 | 0.503 | 1.232 | 0.433 | 1.295 | 0.371 | 1.354 |
| 12.0 | 0.955 | 1.055 | 0.839 | 1.131 | 0.733 | 1.206 | 0.638 | 1.280 | 0.552 | 1.351 | 0.475 | 1.419 | 0.407 | 1.484 |
| 13.0 | 1.040 | 1.149 | 0.914 | 1.232 | 0.799 | 1.314 | 0.694 | 1.394 | 0.601 | 1.471 | 0.517 | 1.545 | 0.443 | 1.616 |
| 14.0 | 1.126 | 1.244 | 0.990 | 1.333 | 0.865 | 1.422 | 0.752 | 1.508 | 0.650 | 1.592 | 0.560 | 1.672 | 0.480 | 1.749 |
| 15.0 | 1.213 | 1.340 | 1.066 | 1.436 | 0.932 | 1.531 | 0.810 | 1.624 | 0.701 | 1.715 | 0.603 | 1.801 | 0.517 | 1.883 |
| 16.0 | 1.301 | 1.437 | 1.143 | 1.540 | 0.999 | 1.642 | 0.869 | 1.742 | 0.751 | 1.838 | 0.647 | 1.931 | 0.554 | 2.019 |
| 17.0 | 1.390 | 1.535 | 1.221 | 1.645 | 1.067 | 1.754 | 0.928 | 1.860 | 0.803 | 1.963 | 0.691 | 2.062 | 0.592 | 2.156 |
| 18.0 | 1.479 | 1.634 | 1.300 | 1.751 | 1.136 | 1.867 | 0.988 | 1.980 | 0.855 | 2.090 | 0.736 | 2.195 | 0.631 | 2.294 |
| 19.0 | 1.570 | 1.734 | 1.380 | 1.858 | 1.206 | 1.981 | 1.049 | 2.101 | 0.908 | 2.217 | 0.781 | 2.329 | 0.669 | 2.434 |
| 20.0 | 1.662 | 1.835 | 1.461 | 1.966 | 1.277 | 2.096 | 1.110 | 2.223 | 0.961 | 2.347 | 0.827 | 2.464 | 0.709 | 2.576 |
| 22.0 | 1.849 | 2.041 | 1.625 | 2.187 | 1.421 | 2.331 | 1.236 | 2.473 | 1.069 | 2.609 | 0.921 | 2.740 | 0.789 | 2.864 |
| 24.0 | 2.040 | 2.252 | 1.793 | 2.413 | 1.568 | 2.572 | 1.364 | 2.728 | 1.180 | 2.878 | 1.016 | 3.022 | 0.871 | 3.159 |
| 26.0 | 2.236 | 2.468 | 1.966 | 2.644 | 1.719 | 2.818 | 1.495 | 2.989 | 1.294 | 3.153 | 1.115 | 3.311 | 0.955 | 3.460 |
| 28.0 | 2.437 | 2.690 | 2.143 | 2.881 | 1.874 | 3.071 | 1.630 | 3.256 | 1.411 | 3.435 | 1.215 | 3.607 | 1.042 | 3.769 |
| 30.0 | 2.643 | 2.917 | 2.324 | 3.125 | 2.033 | 3.330 | 1.769 | 3.530 | 1.531 | 3.724 | 1.319 | 3.910 | 1.130 | 4.086 |
| 32.0 | 2.855 | 3.150 | 2.511 | 3.374 | 2.196 | 3.595 | 1.911 | 3.812 | 1.655 | 4.021 | 1.425 | 4.221 | 1.222 | 4.410 |
| 34.0 | 3.073 | 3.390 | 2.703 | 3.631 | 2.364 | 3.868 | 2.058 | 4.101 | 1.782 | 4.325 | 1.535 | 4.540 | 1.314 | 4.744 |
| 36.0 | 3.296 | 3.637 | 2.900 | 3.894 | 2.537 | 4.149 | 2.208 | 4.398 | 1.912 | 4.638 | 1.648 | 4.868 | 1.412 | 5.086 |
| 38.0 | 3.527 | 3.890 | 3.103 | 4.165 | 2.715 | 4.437 | 2.364 | 4.703 | 2.047 | 4.960 | 1.764 | 5.205 | 1.512 | 5.438 |
| 40.0 | 3.764 | 4.151 | 3.312 | 4.445 | 2.899 | 4.734 | 2.524 | 5.017 | 2.186 | 5.291 | 1.884 | 5.552 | 1.615 | 5.800 |
| 45.0 | 4.391 | 4.841 | 3.865 | 5.182 | 3.384 | 5.518 | 2.947 | 5.846 | 2.553 | 6.164 | 2.201 | 6.467 | 1.888 | 6.753 |
| 50.0 | 5.073 | 5.591 | 4.467 | 5.983 | 3.913 | 6.369 | 3.409 | 6.746 | 2.954 | 7.111 | 2.547 | 7.458 | 2.185 | 7.787 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 13.5 YEARS ( 13 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 13.5 ANS ( 13 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year
Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant |
| 1.0 | 0.070 | 0.077 | 0.060 | 0.081 | 0.052 | 0.086 | 0.045 | 0.090 | 0.038 | 0.094 | 0.032 | 0.097 | 0.027 | 0.100 |
| 1.5 | 0.105 | 0.115 | 0.091 | 0.123 | 0.078 | 0.129 | 0.067 | 0.135 | 0.057 | 0.141 | 0.049 | 0.146 | 0.041 | 0.151 |
| 2.0 | 0.140 | 0.154 | 0.121 | 0.164 | 0.105 | 0.173 | 0.090 | 0.181 | 0.077 | 0.188 | 0.065 | 0.195 | 0.055 | 0.201 |
| 2.5 | 0.178 | 0.193 | 0.152 | 0.205 | 0.131 | 0.216 | 0.113 | 0.227 | 0.096 | 0.236 | 0.082 | 0.245 | 0.069 | 0.252 |
| 3.0 | 0.211 | 0.233 | 0.183 | 0.247 | 0.158 | 0.260 | 0.135 | 0.273 | 0.116 | 0.284 | 0.098 | 0.294 | 0.083 | 0.303 |
| 3.5 | 0.246 | 0.272 | 0.214 | 0.289 | 0.185 | 0.304 | 0.158 | 0.319 | 0.135 | 0.332 | 0.115 | 0.344 | 0.097 | 0.355 |
| 4.0 | 0.282 | 0.312 | 0.245 | 0.331 | 0.212 | 0.348 | 0.182 | 0.365 | 0.155 | 0.381 | 0.131 | 0.394 | 0.111 | 0.406 |
| 4.5 | 0.318 | 0.351 | 0.276 | 0.373 | 0.239 | 0.393 | 0.205 | 0.412 | 0.175 | 0.429 | 0.148 | 0.445 | 0.125 | 0.458 |
| 5.0 | 0.354 | 0.391 | 0.308 | 0.415 | 0.266 | 0.438 | 0.228 | 0.459 | 0.195 | 0.478 | 0.165 | 0.495 | 0.139 | 0.510 |
| 5.5 | 0.391 | 0.432 | 0.339 | 0.458 | 0.293 | 0.483 | 0.251 | 0.506 | 0.215 | 0.527 | 0.182 | 0.546 | 0.154 | 0.563 |
| 6.0 | 0.427 | 0.472 | 0.371 | 0.501 | 0.320 | 0.528 | 0.275 | 0.553 | 0.235 | 0.576 | 0.199 | 0.597 | 0.168 | 0.615 |
| 6.5 | 0.464 | 0.513 | 0.403 | 0.544 | 0.348 | 0.573 | 0.299 | 0.601 | 0.255 | 0.626 | 0.216 | 0.648 | 0.182 | 0.668 |
| 7.0 | 0.501 | 0.553 | 0.435 | 0.587 | 0.376 | 0.619 | 0.322 | 0.648 | 0.275 | 0.675 | 0.233 | 0.700 | 0.197 | 0.721 |
| 7.5 | 0.538 | 0.594 | 0.467 | 0.630 | 0.404 | 0.664 | 0.346 | 0.696 | 0.296 | 0.725 | 0.251 | 0.752 | 0.212 | 0.774 |
| 8.0 | 0.575 | 0.636 | 0.500 | 0.674 | 0.432 | 0.710 | 0.370 | 0.745 | 0.316 | 0.776 | 0.268 | 0.804 | 0.226 | 0.828 |
| 9.0 | 0.650 | 0.719 | 0.565 | 0.762 | 0.488 | 0.803 | 0.419 | 0.842 | 0.357 | 0.877 | 0.303 | 0.908 | 0.256 | 0.936 |
| 10.0 | 0.726 | 0.802 | 0.631 | 0.851 | 0.545 | 0.897 | 0.468 | 0.940 | 0.399 | 0.979 | 0.339 | 1.014 | 0.286 | 1.045 |
| 11.0 | 0.803 | 0.887 | 0.698 | 0.941 | 0.603 | 0.992 | 0.517 | 1.039 | 0.442 | 1.082 | 0.375 | 1.121 | 0.316 | 1.155 |
| 12.0 | 0.881 | 0.973 | 0.765 | 1.031 | 0.661 | 1.087 | 0.567 | 1.139 | 0.484 | 1.187 | 0.411 | 1.229 | 0.347 | 1.267 |
| 13.0 | 0.959 | 1.059 | 0.833 | 1.123 | 0.720 | 1.184 | 0.618 | 1.240 | 0.527 | 1.292 | 0.448 | 1.339 | 0.378 | 1.379 |
| 14.0 | 1.038 | 1.147 | 0.902 | 1.216 | 0.779 | 1.281 | 0.669 | 1.343 | 0.571 | 1.399 | 0.485 | 1.449 | 0.409 | 1.493 |
| 15.0 | 1.118 | 1.235 | 0.972 | 1.309 | 0.839 | 1.380 | 0.721 | 1.446 | 0.615 | 1.506 | 0.522 | 1.560 | 0.441 | 1.608 |
| 16.0 | 1.199 | 1.324 | 1.042 | 1.404 | 0.900 | 1.480 | 0.773 | 1.550 | 0.660 | 1.615 | 0.560 | 1.673 | 0.473 | 1.724 |
| 17.0 | 1.281 | 1.415 | 1.113 | 1.500 | 0.962 | 1.581 | 0.826 | 1.656 | 0.705 | 1.725 | 0.598 | 1.787 | 0.505 | 1.841 |
| 18.0 | 1.364 | 1.506 | 1.185 | 1.597 | 1.024 | 1.683 | 0.879 | 1.763 | 0.751 | 1.836 | 0.637 | 1.902 | 0.538 | 1.960 |
| 19.0 | 1.447 | 1.598 | 1.258 | 1.695 | 1.087 | 1.786 | 0.933 | 1.871 | 0.797 | 1.949 | 0.676 | 2.018 | 0.571 | 2.079 |
| 20.0 | 1.532 | 1.692 | 1.332 | 1.794 | 1.151 | 1.890 | 0.988 | 1.980 | 0.844 | 2.052 | 0.716 | 2.136 | 0.605 | 2.201 |
| 22.0 | 1.704 | 1.882 | 1.482 | 1.995 | 1.280 | 2.102 | 1.100 | 2.202 | 0.939 | 2.294 | 0.797 | 2.376 | 0.673 | 2.447 |
| 24.0 | 1.881 | 2.077 | 1.635 | 2.201 | 1.413 | 2.319 | 1.214 | 2.430 | 1.037 | 2.530 | 0.880 | 2.621 | 0.743 | 2.700 |
| 26.0 | 2.062 | 2.276 | 1.793 | 2.413 | 1.550 | 2.542 | 1.331 | 2.663 | 1.137 | 2.773 | 0.965 | 2.872 | 0.815 | 2.958 |
| 28.0 | 2.247 | 2.481 | 1.954 | 2.629 | 1.689 | 2.770 | 1.451 | 2.901 | 1.240 | 3.021 | 1.053 | 3.129 | 0.889 | 3.223 |
| 30.0 | 2.438 | 2.690 | 2.120 | 2.851 | 1.833 | 3.004 | 1.575 | 3.146 | 1.345 | 3.276 | 1.142 | 3.393 | 0.965 | 3.494 |
| 32.0 | 2.633 | 2.906 | 2.291 | 3.079 | 1.980 | 3.244 | 1.702 | 3.397 | 1.454 | 3.538 | 1.235 | 3.663 | 1.043 | 3.773 |
| 34.0 | 2.834 | 3.127 | 2.466 | 3.314 | 2.132 | 3.491 | 1.832 | 3.656 | 1.565 | 3.806 | 1.330 | 3.941 | 1.123 | 4.059 |
| 36.0 | 3.041 | 3.355 | 2.646 | 3.555 | 2.288 | 3.744 | 1.967 | 3.921 | 1.680 | 4.092 | 1.427 | 4.227 | 1.206 | 4.353 |
| 38.0 | 3.253 | 3.589 | 2.831 | 3.803 | 2.449 | 4.005 | 2.105 | 4.194 | 1.799 | 4.356 | 1.528 | 4.520 | 1.291 | 4.655 |
| 40.0 | 3.473 | 3.831 | 3.023 | 4.058 | 2.615 | 4.274 | 2.248 | 4.475 | 1.921 | 4.659 | 1.632 | 4.823 | 1.379 | 4.966 |
| 45.0 | 4.052 | 4.468 | 3.528 | 4.733 | 3.053 | 4.984 | 2.626 | 5.217 | 2.244 | 5.430 | 1.907 | 5.621 | 1.612 | 5.787 |
| 50.0 | 4.682 | 5.162 | 4.079 | 5.467 | 3.531 | 5.755 | 3.038 | 6.023 | 2.598 | 6.258 | 2.208 | 6.487 | 1.866 | 6.679 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 14.5 YEARS ( 14 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 14.5 ANS ( 14 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year

Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant | Risk this year / Risque cette année-là | Risk 10 years ago / Risque 10 ans auparavant |
| 1.0 | 0.064 | 0.071 | 0.055 | 0.075 | 0.047 | 0.078 | 0.040 | 0.080 | 0.034 | 0.083 | 0.028 | 0.085 | 0.023 | 0.086 |
| 1.5 | 0.097 | 0.107 | 0.083 | 0.112 | 0.071 | 0.117 | 0.060 | 0.121 | 0.051 | 0.124 | 0.042 | 0.127 | 0.035 | 0.129 |
| 2.0 | 0.129 | 0.143 | 0.111 | 0.150 | 0.095 | 0.156 | 0.080 | 0.162 | 0.068 | 0.166 | 0.057 | 0.170 | 0.047 | 0.172 |
| 2.5 | 0.162 | 0.179 | 0.139 | 0.188 | 0.119 | 0.196 | 0.101 | 0.203 | 0.085 | 0.208 | 0.071 | 0.213 | 0.059 | 0.216 |
| 3.0 | 0.195 | 0.215 | 0.168 | 0.226 | 0.143 | 0.236 | 0.121 | 0.244 | 0.102 | 0.251 | 0.085 | 0.256 | 0.071 | 0.260 |
| 3.5 | 0.228 | 0.252 | 0.196 | 0.264 | 0.167 | 0.275 | 0.142 | 0.285 | 0.119 | 0.293 | 0.100 | 0.299 | 0.083 | 0.304 |
| 4.0 | 0.261 | 0.289 | 0.224 | 0.303 | 0.192 | 0.316 | 0.162 | 0.327 | 0.137 | 0.336 | 0.114 | 0.343 | 0.095 | 0.348 |
| 4.5 | 0.295 | 0.326 | 0.253 | 0.342 | 0.216 | 0.356 | 0.183 | 0.368 | 0.154 | 0.379 | 0.129 | 0.387 | 0.107 | 0.392 |
| 5.0 | 0.328 | 0.363 | 0.282 | 0.380 | 0.241 | 0.396 | 0.204 | 0.410 | 0.172 | 0.422 | 0.144 | 0.431 | 0.119 | 0.437 |
| 5.5 | 0.362 | 0.400 | 0.311 | 0.419 | 0.265 | 0.437 | 0.225 | 0.452 | 0.189 | 0.465 | 0.158 | 0.475 | 0.132 | 0.482 |
| 6.0 | 0.396 | 0.437 | 0.340 | 0.459 | 0.290 | 0.478 | 0.246 | 0.495 | 0.207 | 0.508 | 0.173 | 0.519 | 0.144 | 0.527 |
| 6.5 | 0.430 | 0.475 | 0.369 | 0.498 | 0.315 | 0.519 | 0.267 | 0.537 | 0.225 | 0.552 | 0.188 | 0.564 | 0.156 | 0.572 |
| 7.0 | 0.464 | 0.513 | 0.399 | 0.538 | 0.340 | 0.560 | 0.288 | 0.580 | 0.243 | 0.596 | 0.203 | 0.609 | 0.169 | 0.618 |
| 7.5 | 0.498 | 0.551 | 0.428 | 0.578 | 0.365 | 0.602 | 0.310 | 0.623 | 0.261 | 0.640 | 0.218 | 0.654 | 0.181 | 0.663 |
| 8.0 | 0.533 | 0.589 | 0.458 | 0.618 | 0.391 | 0.643 | 0.331 | 0.666 | 0.279 | 0.684 | 0.233 | 0.699 | 0.194 | 0.709 |
| 9.0 | 0.603 | 0.666 | 0.518 | 0.698 | 0.442 | 0.728 | 0.375 | 0.753 | 0.315 | 0.774 | 0.264 | 0.790 | 0.219 | 0.802 |
| 10.0 | 0.673 | 0.743 | 0.578 | 0.780 | 0.494 | 0.812 | 0.418 | 0.841 | 0.352 | 0.864 | 0.295 | 0.882 | 0.245 | 0.896 |
| 11.0 | 0.744 | 0.822 | 0.639 | 0.862 | 0.546 | 0.898 | 0.463 | 0.929 | 0.389 | 0.955 | 0.326 | 0.976 | 0.271 | 0.990 |
| 12.0 | 0.816 | 0.901 | 0.701 | 0.945 | 0.599 | 0.985 | 0.507 | 1.019 | 0.427 | 1.047 | 0.357 | 1.070 | 0.297 | 1.086 |
| 13.0 | 0.889 | 0.981 | 0.764 | 1.030 | 0.652 | 1.072 | 0.553 | 1.110 | 0.465 | 1.140 | 0.389 | 1.165 | 0.324 | 1.182 |
| 14.0 | 0.962 | 1.063 | 0.827 | 1.114 | 0.706 | 1.161 | 0.598 | 1.201 | 0.504 | 1.235 | 0.421 | 1.261 | 0.350 | 1.280 |
| 15.0 | 1.036 | 1.144 | 0.891 | 1.200 | 0.760 | 1.250 | 0.645 | 1.294 | 0.543 | 1.330 | 0.454 | 1.358 | 0.377 | 1.378 |
| 16.0 | 1.111 | 1.227 | 0.955 | 1.287 | 0.815 | 1.341 | 0.691 | 1.387 | 0.582 | 1.426 | 0.487 | 1.456 | 0.405 | 1.478 |
| 17.0 | 1.187 | 1.311 | 1.020 | 1.375 | 0.871 | 1.432 | 0.739 | 1.482 | 0.622 | 1.523 | 0.520 | 1.555 | 0.433 | 1.578 |
| 18.0 | 1.264 | 1.396 | 1.087 | 1.464 | 0.928 | 1.525 | 0.786 | 1.577 | 0.662 | 1.621 | 0.554 | 1.656 | 0.461 | 1.680 |
| 19.0 | 1.341 | 1.481 | 1.153 | 1.554 | 0.985 | 1.618 | 0.835 | 1.674 | 0.703 | 1.721 | 0.588 | 1.757 | 0.489 | 1.783 |
| 20.0 | 1.420 | 1.568 | 1.221 | 1.644 | 1.042 | 1.713 | 0.884 | 1.772 | 0.744 | 1.821 | 0.623 | 1.860 | 0.518 | 1.887 |
| 22.0 | 1.580 | 1.744 | 1.358 | 1.829 | 1.160 | 1.905 | 0.984 | 1.971 | 0.829 | 2.026 | 0.693 | 2.068 | 0.577 | 2.099 |
| 24.0 | 1.743 | 1.925 | 1.499 | 2.019 | 1.280 | 2.102 | 1.086 | 2.175 | 0.915 | 2.235 | 0.766 | 2.282 | 0.637 | 2.316 |
| 26.0 | 1.911 | 2.110 | 1.644 | 2.213 | 1.404 | 2.304 | 1.191 | 2.384 | 1.003 | 2.449 | 0.840 | 2.501 | 0.698 | 2.538 |
| 28.0 | 2.083 | 2.300 | 1.792 | 2.412 | 1.531 | 2.511 | 1.290 | 2.598 | 1.094 | 2.669 | 0.916 | 2.726 | 0.762 | 2.766 |
| 30.0 | 2.260 | 2.495 | 1.944 | 2.616 | 1.661 | 2.724 | 1.409 | 2.817 | 1.187 | 2.895 | 0.994 | 2.956 | 0.827 | 3.000 |
| 32.0 | 2.441 | 2.695 | 2.101 | 2.825 | 1.795 | 2.942 | 1.523 | 3.043 | 1.283 | 3.126 | 1.074 | 3.192 | 0.893 | 3.239 |
| 34.0 | 2.628 | 2.900 | 2.261 | 3.040 | 1.932 | 3.166 | 1.640 | 3.274 | 1.382 | 3.354 | 1.157 | 3.435 | 0.962 | 3.486 |
| 36.0 | 2.820 | 3.111 | 2.427 | 3.262 | 2.074 | 3.396 | 1.760 | 3.513 | 1.483 | 3.609 | 1.242 | 3.685 | 1.033 | 3.739 |
| 38.0 | 3.017 | 3.329 | 2.597 | 3.490 | 2.220 | 3.634 | 1.884 | 3.758 | 1.588 | 3.851 | 1.330 | 3.942 | 1.106 | 4.000 |
| 40.0 | 3.221 | 3.553 | 2.773 | 3.725 | 2.370 | 3.878 | 2.012 | 4.010 | 1.696 | 4.120 | 1.420 | 4.206 | 1.182 | 4.268 |
| 45.0 | 3.759 | 4.146 | 3.238 | 4.345 | 2.769 | 4.523 | 2.351 | 4.677 | 1.982 | 4.805 | 1.660 | 4.905 | 1.382 | 4.977 |
| 50.0 | 4.345 | 4.791 | 3.744 | 5.020 | 3.203 | 5.225 | 2.720 | 5.402 | 2.294 | 5.549 | 1.922 | 5.664 | 1.600 | 5.747 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 15.5 YEARS ( 15 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 15.5 ANS ( 15 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year

Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant |
| 2.0 | 0.120 | 0.140 | 0.102 | 0.160 | 0.086 | 0.183 | 0.072 | 0.206 | 0.060 | 0.231 | 0.049 | 0.257 | 0.040 | 0.284 |
| 2.5 | 0.151 | 0.175 | 0.128 | 0.201 | 0.108 | 0.229 | 0.090 | 0.258 | 0.075 | 0.289 | 0.062 | 0.322 | 0.051 | 0.355 |
| 3.0 | 0.182 | 0.211 | 0.154 | 0.242 | 0.130 | 0.275 | 0.109 | 0.310 | 0.090 | 0.348 | 0.074 | 0.387 | 0.061 | 0.427 |
| 3.5 | 0.212 | 0.247 | 0.180 | 0.283 | 0.152 | 0.322 | 0.127 | 0.363 | 0.106 | 0.407 | 0.087 | 0.452 | 0.071 | 0.500 |
| 4.0 | 0.243 | 0.282 | 0.207 | 0.324 | 0.174 | 0.368 | 0.146 | 0.416 | 0.121 | 0.466 | 0.100 | 0.518 | 0.082 | 0.572 |
| 4.5 | 0.274 | 0.319 | 0.233 | 0.365 | 0.196 | 0.415 | 0.164 | 0.469 | 0.136 | 0.525 | 0.112 | 0.584 | 0.092 | 0.645 |
| 5.0 | 0.305 | 0.355 | 0.260 | 0.407 | 0.219 | 0.463 | 0.183 | 0.522 | 0.152 | 0.585 | 0.125 | 0.651 | 0.103 | 0.718 |
| 5.5 | 0.337 | 0.391 | 0.286 | 0.449 | 0.241 | 0.510 | 0.202 | 0.576 | 0.168 | 0.645 | 0.138 | 0.717 | 0.113 | 0.792 |
| 6.0 | 0.368 | 0.428 | 0.313 | 0.491 | 0.264 | 0.558 | 0.221 | 0.630 | 0.183 | 0.705 | 0.151 | 0.784 | 0.124 | 0.866 |
| 6.5 | 0.400 | 0.465 | 0.340 | 0.533 | 0.287 | 0.606 | 0.240 | 0.684 | 0.199 | 0.766 | 0.164 | 0.852 | 0.134 | 0.940 |
| 7.0 | 0.432 | 0.502 | 0.367 | 0.575 | 0.309 | 0.654 | 0.259 | 0.738 | 0.215 | 0.827 | 0.177 | 0.919 | 0.145 | 1.015 |
| 7.5 | 0.464 | 0.539 | 0.394 | 0.618 | 0.332 | 0.702 | 0.278 | 0.793 | 0.231 | 0.888 | 0.190 | 0.987 | 0.156 | 1.090 |
| 8.0 | 0.496 | 0.576 | 0.422 | 0.660 | 0.356 | 0.751 | 0.297 | 0.848 | 0.247 | 0.949 | 0.204 | 1.055 | 0.167 | 1.165 |
| 9.0 | 0.561 | 0.651 | 0.477 | 0.747 | 0.402 | 0.849 | 0.336 | 0.958 | 0.279 | 1.073 | 0.230 | 1.193 | 0.188 | 1.317 |
| 10.0 | 0.626 | 0.727 | 0.532 | 0.834 | 0.449 | 0.948 | 0.376 | 1.070 | 0.312 | 1.198 | 0.257 | 1.332 | 0.210 | 1.470 |
| 11.0 | 0.693 | 0.804 | 0.589 | 0.922 | 0.497 | 1.048 | 0.415 | 1.183 | 0.345 | 1.324 | 0.284 | 1.472 | 0.233 | 1.625 |
| 12.0 | 0.760 | 0.882 | 0.646 | 1.011 | 0.545 | 1.149 | 0.456 | 1.297 | 0.378 | 1.452 | 0.312 | 1.613 | 0.255 | 1.781 |
| 13.0 | 0.827 | 0.960 | 0.703 | 1.101 | 0.593 | 1.251 | 0.496 | 1.412 | 0.412 | 1.580 | 0.340 | 1.756 | 0.278 | 1.938 |
| 14.0 | 0.896 | 1.040 | 0.761 | 1.191 | 0.642 | 1.355 | 0.537 | 1.528 | 0.446 | 1.710 | 0.368 | 1.901 | 0.301 | 2.098 |
| 15.0 | 0.965 | 1.120 | 0.820 | 1.283 | 0.692 | 1.459 | 0.579 | 1.645 | 0.481 | 1.842 | 0.396 | 2.047 | 0.324 | 2.258 |
| 16.0 | 1.035 | 1.201 | 0.880 | 1.376 | 0.742 | 1.564 | 0.621 | 1.764 | 0.516 | 1.975 | 0.425 | 2.194 | 0.348 | 2.421 |
| 17.0 | 1.105 | 1.283 | 0.940 | 1.470 | 0.793 | 1.671 | 0.663 | 1.894 | 0.551 | 2.109 | 0.454 | 2.343 | 0.372 | 2.585 |
| 18.0 | 1.177 | 1.366 | 1.001 | 1.565 | 0.844 | 1.778 | 0.706 | 2.006 | 0.587 | 2.244 | 0.484 | 2.494 | 0.396 | 2.751 |
| 19.0 | 1.249 | 1.450 | 1.062 | 1.661 | 0.896 | 1.887 | 0.750 | 2.128 | 0.623 | 2.382 | 0.514 | 2.646 | 0.421 | 2.918 |
| 20.0 | 1.322 | 1.534 | 1.124 | 1.758 | 0.949 | 1.998 | 0.794 | 2.252 | 0.660 | 2.520 | 0.544 | 2.799 | 0.445 | 3.088 |
| 22.0 | 1.471 | 1.707 | 1.251 | 1.955 | 1.056 | 2.222 | 0.884 | 2.505 | 0.734 | 2.802 | 0.605 | 3.112 | 0.494 | 3.432 |
| 24.0 | 1.624 | 1.884 | 1.381 | 2.157 | 1.165 | 2.451 | 0.976 | 2.763 | 0.811 | 3.090 | 0.668 | 3.432 | 0.547 | 3.784 |
| 26.0 | 1.780 | 2.065 | 1.514 | 2.365 | 1.278 | 2.686 | 1.070 | 3.027 | 0.889 | 3.386 | 0.733 | 3.739 | 0.600 | 4.144 |
| 28.0 | 1.940 | 2.251 | 1.651 | 2.577 | 1.393 | 2.927 | 1.167 | 3.298 | 0.969 | 3.638 | 0.800 | 4.094 | 0.655 | 4.512 |
| 30.0 | 2.105 | 2.441 | 1.791 | 2.795 | 1.512 | 3.174 | 1.266 | 3.576 | 1.052 | 3.998 | 0.868 | 4.437 | 0.711 | 4.890 |
| 32.0 | 2.274 | 2.637 | 1.935 | 3.018 | 1.634 | 3.427 | 1.368 | 3.841 | 1.137 | 4.316 | 0.938 | 4.789 | 0.769 | 5.276 |
| 34.0 | 2.448 | 2.838 | 2.084 | 3.248 | 1.759 | 3.688 | 1.473 | 4.153 | 1.225 | 4.642 | 1.010 | 5.150 | 0.827 | 5.673 |
| 36.0 | 2.627 | 3.045 | 2.236 | 3.485 | 1.888 | 3.955 | 1.582 | 4.454 | 1.315 | 4.977 | 1.085 | 5.520 | 0.889 | 6.080 |
| 38.0 | 2.811 | 3.258 | 2.393 | 3.728 | 2.021 | 4.231 | 1.693 | 4.743 | 1.408 | 5.321 | 1.161 | 5.901 | 0.951 | 6.498 |
| 40.0 | 3.001 | 3.478 | 2.555 | 3.978 | 2.158 | 4.514 | 1.808 | 5.081 | 1.503 | 5.676 | 1.241 | 6.293 | 1.014 | 6.928 |
| 45.0 | 3.503 | 4.058 | 2.984 | 4.640 | 2.521 | 5.262 | 2.113 | 5.921 | 1.757 | 6.610 | 1.450 | 7.325 | 1.188 | 8.060 |
| 50.0 | 4.050 | 4.690 | 3.452 | 5.360 | 2.917 | 6.075 | 2.446 | 6.832 | 2.034 | 7.623 | 1.680 | 8.442 | 1.377 | 9.283 |
| 55.0 | 4.651 | 5.383 | 3.966 | 6.149 | 3.353 | 6.966 | 2.812 | 7.828 | 2.340 | 8.729 | 1.932 | 9.661 | 1.584 | 10.62 |
| 60.0 | 5.310 | 6.152 | 4.537 | 7.023 | 3.838 | 7.952 | 3.220 | 8.930 | 2.681 | 9.951 | 2.214 | 11.01 | 1.816 | 12.08 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 16.5 YEARS ( 16 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 16.5 ANS ( 16 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year

Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant |
| 2.0 | 0.113 | 0.131 | 0.095 | 0.148 | 0.079 | 0.167 | 0.065 | 0.186 | 0.053 | 0.205 | 0.043 | 0.225 | 0.035 | 0.244 |
| 2.5 | 0.141 | 0.164 | 0.119 | 0.186 | 0.099 | 0.209 | 0.081 | 0.233 | 0.067 | 0.257 | 0.054 | 0.282 | 0.044 | 0.306 |
| 3.0 | 0.170 | 0.197 | 0.143 | 0.223 | 0.119 | 0.251 | 0.098 | 0.280 | 0.080 | 0.309 | 0.065 | 0.339 | 0.052 | 0.368 |
| 3.5 | 0.198 | 0.230 | 0.167 | 0.261 | 0.139 | 0.294 | 0.115 | 0.327 | 0.094 | 0.362 | 0.076 | 0.396 | 0.061 | 0.431 |
| 4.0 | 0.227 | 0.264 | 0.191 | 0.299 | 0.159 | 0.337 | 0.131 | 0.375 | 0.108 | 0.414 | 0.087 | 0.454 | 0.070 | 0.493 |
| 4.5 | 0.256 | 0.298 | 0.215 | 0.338 | 0.179 | 0.379 | 0.148 | 0.423 | 0.121 | 0.467 | 0.098 | 0.512 | 0.079 | 0.556 |
| 5.0 | 0.286 | 0.332 | 0.240 | 0.376 | 0.200 | 0.423 | 0.165 | 0.471 | 0.135 | 0.520 | 0.110 | 0.570 | 0.088 | 0.619 |
| 5.5 | 0.315 | 0.366 | 0.265 | 0.415 | 0.220 | 0.466 | 0.182 | 0.519 | 0.149 | 0.573 | 0.121 | 0.628 | 0.097 | 0.683 |
| 6.0 | 0.344 | 0.400 | 0.289 | 0.453 | 0.241 | 0.510 | 0.199 | 0.568 | 0.163 | 0.627 | 0.132 | 0.687 | 0.107 | 0.747 |
| 6.5 | 0.374 | 0.434 | 0.314 | 0.492 | 0.262 | 0.553 | 0.216 | 0.616 | 0.177 | 0.681 | 0.144 | 0.746 | 0.116 | 0.811 |
| 7.0 | 0.404 | 0.469 | 0.339 | 0.532 | 0.283 | 0.597 | 0.233 | 0.666 | 0.191 | 0.735 | 0.155 | 0.805 | 0.125 | 0.875 |
| 7.5 | 0.434 | 0.504 | 0.364 | 0.571 | 0.304 | 0.642 | 0.251 | 0.715 | 0.205 | 0.789 | 0.167 | 0.865 | 0.134 | 0.940 |
| 8.0 | 0.464 | 0.539 | 0.390 | 0.611 | 0.325 | 0.686 | 0.268 | 0.764 | 0.220 | 0.844 | 0.178 | 0.925 | 0.144 | 1.005 |
| 9.0 | 0.524 | 0.609 | 0.441 | 0.690 | 0.367 | 0.776 | 0.303 | 0.864 | 0.248 | 0.954 | 0.202 | 1.045 | 0.162 | 1.136 |
| 10.0 | 0.586 | 0.680 | 0.492 | 0.771 | 0.410 | 0.866 | 0.339 | 0.965 | 0.277 | 1.065 | 0.225 | 1.167 | 0.181 | 1.268 |
| 11.0 | 0.647 | 0.752 | 0.544 | 0.852 | 0.454 | 0.958 | 0.375 | 1.067 | 0.307 | 1.178 | 0.249 | 1.290 | 0.201 | 1.402 |
| 12.0 | 0.710 | 0.824 | 0.597 | 0.935 | 0.497 | 1.050 | 0.411 | 1.169 | 0.336 | 1.291 | 0.273 | 1.414 | 0.220 | 1.537 |
| 13.0 | 0.773 | 0.898 | 0.650 | 1.018 | 0.542 | 1.143 | 0.447 | 1.273 | 0.366 | 1.406 | 0.298 | 1.540 | 0.240 | 1.673 |
| 14.0 | 0.837 | 0.972 | 0.704 | 1.102 | 0.587 | 1.238 | 0.484 | 1.378 | 0.397 | 1.522 | 0.322 | 1.666 | 0.260 | 1.811 |
| 15.0 | 0.902 | 1.047 | 0.758 | 1.187 | 0.632 | 1.333 | 0.522 | 1.484 | 0.427 | 1.639 | 0.347 | 1.794 | 0.280 | 1.950 |
| 16.0 | 0.967 | 1.123 | 0.813 | 1.273 | 0.678 | 1.429 | 0.560 | 1.591 | 0.458 | 1.757 | 0.372 | 1.924 | 0.300 | 2.090 |
| 17.0 | 1.033 | 1.200 | 0.869 | 1.359 | 0.724 | 1.527 | 0.598 | 1.700 | 0.490 | 1.876 | 0.398 | 2.055 | 0.321 | 2.232 |
| 18.0 | 1.100 | 1.277 | 0.925 | 1.447 | 0.771 | 1.625 | 0.637 | 1.809 | 0.522 | 1.997 | 0.424 | 2.187 | 0.341 | 2.376 |
| 19.0 | 1.168 | 1.355 | 0.982 | 1.536 | 0.819 | 1.725 | 0.676 | 1.920 | 0.554 | 2.119 | 0.450 | 2.320 | 0.363 | 2.521 |
| 20.0 | 1.236 | 1.435 | 1.040 | 1.626 | 0.867 | 1.826 | 0.716 | 2.032 | 0.586 | 2.243 | 0.476 | 2.455 | 0.384 | 2.667 |
| 22.0 | 1.375 | 1.596 | 1.157 | 1.809 | 0.964 | 2.031 | 0.797 | 2.260 | 0.653 | 2.494 | 0.530 | 2.730 | 0.427 | 2.965 |
| 24.0 | 1.518 | 1.762 | 1.277 | 1.996 | 1.065 | 2.241 | 0.880 | 2.494 | 0.721 | 2.751 | 0.585 | 3.011 | 0.472 | 3.270 |
| 26.0 | 1.664 | 1.931 | 1.400 | 2.188 | 1.168 | 2.456 | 0.965 | 2.732 | 0.790 | 3.015 | 0.642 | 3.299 | 0.518 | 3.582 |
| 28.0 | 1.815 | 2.105 | 1.527 | 2.384 | 1.273 | 2.676 | 1.052 | 2.977 | 0.862 | 3.284 | 0.700 | 3.594 | 0.565 | 3.902 |
| 30.0 | 1.969 | 2.284 | 1.657 | 2.586 | 1.382 | 2.902 | 1.142 | 3.229 | 0.936 | 3.551 | 0.760 | 3.896 | 0.613 | 4.229 |
| 32.0 | 2.127 | 2.467 | 1.790 | 2.793 | 1.493 | 3.134 | 1.234 | 3.486 | 1.011 | 3.845 | 0.822 | 4.206 | 0.663 | 4.565 |
| 34.0 | 2.290 | 2.655 | 1.927 | 3.006 | 1.608 | 3.373 | 1.329 | 3.731 | 1.089 | 4.136 | 0.885 | 4.524 | 0.714 | 4.909 |
| 36.0 | 2.457 | 2.849 | 2.069 | 3.225 | 1.726 | 3.618 | 1.427 | 4.023 | 1.169 | 4.436 | 0.950 | 4.851 | 0.766 | 5.263 |
| 38.0 | 2.630 | 3.049 | 2.214 | 3.451 | 1.847 | 3.870 | 1.527 | 4.303 | 1.252 | 4.744 | 1.018 | 5.186 | 0.821 | 5.627 |
| 40.0 | 2.807 | 3.254 | 2.364 | 3.683 | 1.973 | 4.130 | 1.631 | 4.591 | 1.337 | 5.061 | 1.087 | 5.532 | 0.877 | 6.001 |
| 45.0 | 3.278 | 3.798 | 2.761 | 4.297 | 2.305 | 4.817 | 1.907 | 5.332 | 1.563 | 5.897 | 1.271 | 6.444 | 1.025 | 6.987 |
| 50.0 | 3.790 | 4.390 | 3.194 | 4.964 | 2.667 | 5.563 | 2.207 | 6.179 | 1.810 | 6.804 | 1.472 | 7.432 | 1.188 | 8.055 |
| 55.0 | 4.354 | 5.040 | 3.671 | 5.697 | 3.067 | 6.381 | 2.538 | 7.084 | 2.082 | 7.797 | 1.694 | 8.512 | 1.367 | 9.221 |
| 60.0 | 4.970 | 5.762 | 4.201 | 6.509 | 3.511 | 7.287 | 2.907 | 8.085 | 2.386 | 8.894 | 1.941 | 9.705 | 1.567 | 10.51 |

## ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 17.5 YEARS ( 17 YEARS AT LAST BIRTHDAY)

## RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 17.5 ANS ( 17 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year

Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| Percentage already infected / Pourcentage de sujets déjà infectés | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant |
| 2.0 | 0.106 | 0.123 | 0.088 | 0.138 | 0.072 | 0.153 | 0.059 | 0.168 | 0.047 | 0.183 | 0.038 | 0.197 | 0.030 | 0.211 |
| 2.5 | 0.132 | 0.154 | 0.110 | 0.172 | 0.090 | 0.191 | 0.074 | 0.210 | 0.059 | 0.229 | 0.048 | 0.247 | 0.038 | 0.265 |
| 3.0 | 0.159 | 0.185 | 0.132 | 0.207 | 0.109 | 0.230 | 0.089 | 0.253 | 0.072 | 0.276 | 0.057 | 0.298 | 0.045 | 0.318 |
| 3.5 | 0.186 | 0.216 | 0.155 | 0.242 | 0.127 | 0.269 | 0.104 | 0.296 | 0.084 | 0.322 | 0.067 | 0.348 | 0.053 | 0.372 |
| 4.0 | 0.213 | 0.248 | 0.177 | 0.278 | 0.146 | 0.308 | 0.119 | 0.339 | 0.096 | 0.369 | 0.077 | 0.399 | 0.061 | 0.426 |
| 4.5 | 0.240 | 0.279 | 0.200 | 0.313 | 0.164 | 0.348 | 0.134 | 0.382 | 0.108 | 0.416 | 0.086 | 0.449 | 0.069 | 0.481 |
| 5.0 | 0.268 | 0.311 | 0.223 | 0.349 | 0.183 | 0.387 | 0.149 | 0.426 | 0.120 | 0.464 | 0.096 | 0.501 | 0.076 | 0.536 |
| 5.5 | 0.295 | 0.343 | 0.245 | 0.385 | 0.202 | 0.427 | 0.165 | 0.470 | 0.133 | 0.511 | 0.106 | 0.552 | 0.084 | 0.590 |
| 6.0 | 0.323 | 0.375 | 0.268 | 0.421 | 0.221 | 0.467 | 0.180 | 0.514 | 0.145 | 0.559 | 0.116 | 0.603 | 0.092 | 0.646 |
| 6.5 | 0.351 | 0.407 | 0.292 | 0.457 | 0.240 | 0.507 | 0.195 | 0.558 | 0.158 | 0.607 | 0.126 | 0.655 | 0.100 | 0.701 |
| 7.0 | 0.379 | 0.440 | 0.315 | 0.493 | 0.259 | 0.548 | 0.211 | 0.602 | 0.170 | 0.656 | 0.136 | 0.707 | 0.108 | 0.757 |
| 7.5 | 0.407 | 0.473 | 0.338 | 0.530 | 0.278 | 0.588 | 0.227 | 0.647 | 0.183 | 0.704 | 0.146 | 0.760 | 0.116 | 0.813 |
| 8.0 | 0.435 | 0.505 | 0.362 | 0.567 | 0.298 | 0.629 | 0.242 | 0.691 | 0.196 | 0.753 | 0.157 | 0.812 | 0.124 | 0.869 |
| 9.0 | 0.492 | 0.571 | 0.409 | 0.641 | 0.337 | 0.711 | 0.274 | 0.782 | 0.221 | 0.851 | 0.177 | 0.918 | 0.140 | 0.982 |
| 10.0 | 0.549 | 0.638 | 0.457 | 0.715 | 0.376 | 0.794 | 0.306 | 0.873 | 0.247 | 0.950 | 0.198 | 1.025 | 0.157 | 1.097 |
| 11.0 | 0.607 | 0.705 | 0.505 | 0.791 | 0.416 | 0.878 | 0.339 | 0.965 | 0.273 | 1.051 | 0.219 | 1.133 | 0.173 | 1.213 |
| 12.0 | 0.666 | 0.774 | 0.554 | 0.867 | 0.456 | 0.963 | 0.372 | 1.058 | 0.300 | 1.152 | 0.240 | 1.243 | 0.190 | 1.329 |
| 13.0 | 0.726 | 0.842 | 0.603 | 0.944 | 0.497 | 1.048 | 0.405 | 1.152 | 0.327 | 1.254 | 0.261 | 1.353 | 0.207 | 1.447 |
| 14.0 | 0.786 | 0.912 | 0.653 | 1.022 | 0.538 | 1.135 | 0.438 | 1.247 | 0.354 | 1.358 | 0.283 | 1.465 | 0.224 | 1.567 |
| 15.0 | 0.846 | 0.982 | 0.704 | 1.101 | 0.579 | 1.222 | 0.472 | 1.343 | 0.381 | 1.462 | 0.305 | 1.577 | 0.242 | 1.687 |
| 16.0 | 0.908 | 1.054 | 0.755 | 1.181 | 0.621 | 1.311 | 0.506 | 1.440 | 0.409 | 1.568 | 0.327 | 1.691 | 0.259 | 1.809 |
| 17.0 | 0.970 | 1.126 | 0.806 | 1.262 | 0.664 | 1.400 | 0.541 | 1.538 | 0.437 | 1.674 | 0.349 | 1.806 | 0.277 | 1.932 |
| 18.0 | 1.032 | 1.198 | 0.859 | 1.343 | 0.707 | 1.490 | 0.576 | 1.638 | 0.465 | 1.782 | 0.372 | 1.923 | 0.295 | 2.056 |
| 19.0 | 1.096 | 1.272 | 0.911 | 1.426 | 0.750 | 1.582 | 0.612 | 1.738 | 0.494 | 1.892 | 0.395 | 2.040 | 0.313 | 2.182 |
| 20.0 | 1.160 | 1.346 | 0.965 | 1.509 | 0.794 | 1.674 | 0.648 | 1.840 | 0.523 | 2.002 | 0.418 | 2.159 | 0.332 | 2.309 |
| 22.0 | 1.291 | 1.498 | 1.074 | 1.679 | 0.884 | 1.862 | 0.721 | 2.046 | 0.582 | 2.227 | 0.466 | 2.401 | 0.369 | 2.568 |
| 24.0 | 1.425 | 1.653 | 1.185 | 1.853 | 0.976 | 2.055 | 0.796 | 2.258 | 0.643 | 2.456 | 0.514 | 2.649 | 0.408 | 2.832 |
| 26.0 | 1.562 | 1.813 | 1.300 | 2.031 | 1.070 | 2.253 | 0.873 | 2.474 | 0.705 | 2.692 | 0.564 | 2.903 | 0.447 | 3.103 |
| 28.0 | 1.703 | 1.976 | 1.417 | 2.214 | 1.167 | 2.455 | 0.952 | 2.696 | 0.769 | 2.933 | 0.615 | 3.162 | 0.488 | 3.381 |
| 30.0 | 1.848 | 2.144 | 1.538 | 2.401 | 1.267 | 2.663 | 1.033 | 2.924 | 0.834 | 3.181 | 0.668 | 3.429 | 0.530 | 3.665 |
| 32.0 | 1.996 | 2.316 | 1.662 | 2.594 | 1.369 | 2.876 | 1.117 | 3.158 | 0.902 | 3.435 | 0.722 | 3.702 | 0.573 | 3.957 |
| 34.0 | 2.149 | 2.493 | 1.789 | 2.792 | 1.474 | 3.095 | 1.203 | 3.398 | 0.971 | 3.696 | 0.778 | 3.983 | 0.617 | 4.257 |
| 36.0 | 2.307 | 2.675 | 1.920 | 2.995 | 1.583 | 3.321 | 1.291 | 3.645 | 1.043 | 3.964 | 0.835 | 4.272 | 0.663 | 4.565 |
| 38.0 | 2.469 | 2.862 | 2.056 | 3.205 | 1.694 | 3.553 | 1.382 | 3.899 | 1.117 | 4.240 | 0.894 | 4.569 | 0.709 | 4.881 |
| 40.0 | 2.636 | 3.056 | 2.195 | 3.421 | 1.809 | 3.792 | 1.476 | 4.161 | 1.193 | 4.524 | 0.955 | 4.874 | 0.758 | 5.207 |
| 45.0 | 3.078 | 3.567 | 2.564 | 3.992 | 2.114 | 4.423 | 1.726 | 4.853 | 1.395 | 5.274 | 1.117 | 5.680 | 0.887 | 6.067 |
| 50.0 | 3.559 | 4.123 | 2.967 | 4.613 | 2.447 | 5.110 | 1.998 | 5.604 | 1.615 | 6.089 | 1.294 | 6.556 | 1.027 | 7.000 |
| 55.0 | 4.089 | 4.735 | 3.410 | 5.296 | 2.814 | 5.863 | 2.298 | 6.428 | 1.859 | 6.981 | 1.489 | 7.514 | 1.182 | 8.020 |
| 60.0 | 4.678 | 5.414 | 3.903 | 6.053 | 3.222 | 6.698 | 2.633 | 7.341 | 2.130 | 7.959 | 1.707 | 8.573 | 1.356 | 9.147 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 18.5 YEARS ( 18 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 18.5 ANS ( 18 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year

Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant |
| 2.0 | 0.090 | 0.115 | 0.082 | 0.128 | 0.066 | 0.140 | 0.053 | 0.152 | 0.042 | 0.164 | 0.033 | 0.174 | 0.026 | 0.183 |
| 2.5 | 0.125 | 0.145 | 0.102 | 0.160 | 0.083 | 0.176 | 0.067 | 0.191 | 0.053 | 0.205 | 0.042 | 0.218 | 0.033 | 0.229 |
| 3.0 | 0.150 | 0.174 | 0.123 | 0.193 | 0.100 | 0.212 | 0.080 | 0.230 | 0.064 | 0.246 | 0.050 | 0.262 | 0.039 | 0.276 |
| 3.5 | 0.175 | 0.203 | 0.144 | 0.226 | 0.117 | 0.247 | 0.094 | 0.268 | 0.075 | 0.288 | 0.059 | 0.306 | 0.046 | 0.322 |
| 4.0 | 0.201 | 0.233 | 0.165 | 0.259 | 0.134 | 0.284 | 0.108 | 0.308 | 0.086 | 0.330 | 0.067 | 0.351 | 0.053 | 0.369 |
| 4.5 | 0.226 | 0.263 | 0.186 | 0.292 | 0.151 | 0.320 | 0.122 | 0.347 | 0.097 | 0.372 | 0.076 | 0.396 | 0.059 | 0.417 |
| 5.0 | 0.252 | 0.293 | 0.207 | 0.325 | 0.168 | 0.356 | 0.135 | 0.386 | 0.108 | 0.415 | 0.085 | 0.441 | 0.066 | 0.464 |
| 5.5 | 0.278 | 0.323 | 0.228 | 0.358 | 0.186 | 0.393 | 0.149 | 0.426 | 0.119 | 0.457 | 0.093 | 0.486 | 0.073 | 0.512 |
| 6.0 | 0.304 | 0.353 | 0.250 | 0.392 | 0.203 | 0.429 | 0.163 | 0.466 | 0.130 | 0.500 | 0.102 | 0.531 | 0.080 | 0.559 |
| 6.5 | 0.330 | 0.384 | 0.271 | 0.425 | 0.221 | 0.466 | 0.177 | 0.506 | 0.141 | 0.543 | 0.111 | 0.577 | 0.087 | 0.607 |
| 7.0 | 0.356 | 0.414 | 0.293 | 0.459 | 0.238 | 0.503 | 0.191 | 0.546 | 0.152 | 0.586 | 0.120 | 0.623 | 0.094 | 0.656 |
| 7.5 | 0.383 | 0.445 | 0.315 | 0.493 | 0.256 | 0.541 | 0.206 | 0.587 | 0.164 | 0.630 | 0.129 | 0.669 | 0.101 | 0.704 |
| 8.0 | 0.409 | 0.476 | 0.337 | 0.527 | 0.274 | 0.578 | 0.220 | 0.627 | 0.175 | 0.673 | 0.138 | 0.715 | 0.107 | 0.753 |
| 9.0 | 0.463 | 0.538 | 0.381 | 0.596 | 0.309 | 0.654 | 0.249 | 0.709 | 0.198 | 0.761 | 0.156 | 0.809 | 0.122 | 0.851 |
| 10.0 | 0.517 | 0.601 | 0.425 | 0.666 | 0.346 | 0.730 | 0.278 | 0.792 | 0.221 | 0.850 | 0.174 | 0.903 | 0.136 | 0.951 |
| 11.0 | 0.572 | 0.664 | 0.470 | 0.736 | 0.382 | 0.807 | 0.307 | 0.875 | 0.244 | 0.940 | 0.193 | 0.998 | 0.150 | 1.051 |
| 12.0 | 0.627 | 0.728 | 0.516 | 0.807 | 0.419 | 0.885 | 0.337 | 0.960 | 0.268 | 1.030 | 0.211 | 1.095 | 0.165 | 1.152 |
| 13.0 | 0.683 | 0.793 | 0.562 | 0.879 | 0.456 | 0.964 | 0.367 | 1.045 | 0.292 | 1.122 | 0.230 | 1.192 | 0.179 | 1.255 |
| 14.0 | 0.739 | 0.859 | 0.608 | 0.952 | 0.494 | 1.044 | 0.397 | 1.132 | 0.316 | 1.214 | 0.249 | 1.290 | 0.194 | 1.358 |
| 15.0 | 0.797 | 0.925 | 0.655 | 1.025 | 0.533 | 1.124 | 0.428 | 1.219 | 0.341 | 1.308 | 0.268 | 1.390 | 0.209 | 1.463 |
| 16.0 | 0.854 | 0.092 | 0.703 | 1.100 | 0.571 | 1.205 | 0.459 | 1.307 | 0.365 | 1.402 | 0.288 | 1.490 | 0.225 | 1.568 |
| 17.0 | 0.913 | 1.060 | 0.751 | 1.175 | 0.610 | 1.288 | 0.491 | 1.396 | 0.391 | 1.498 | 0.308 | 1.592 | 0.240 | 1.675 |
| 18.0 | 0.972 | 1.128 | 0.799 | 1.251 | 0.650 | 1.371 | 0.523 | 1.486 | 0.416 | 1.595 | 0.328 | 1.694 | 0.256 | 1.783 |
| 19.0 | 1.032 | 1.198 | 0.848 | 1.327 | 0.690 | 1.455 | 0.555 | 1.577 | 0.442 | 1.692 | 0.348 | 1.798 | 0.271 | 1.892 |
| 20.0 | 1.092 | 1.268 | 0.898 | 1.405 | 0.730 | 1.540 | 0.587 | 1.670 | 0.468 | 1.791 | 0.368 | 1.903 | 0.287 | 2.003 |
| 22.0 | 1.215 | 1.410 | 1.000 | 1.563 | 0.813 | 1.713 | 0.654 | 1.857 | 0.520 | 1.993 | 0.410 | 2.117 | 0.320 | 2.227 |
| 24.0 | 1.341 | 1.557 | 1.104 | 1.725 | 0.898 | 1.891 | 0.722 | 2.050 | 0.575 | 2.199 | 0.453 | 2.335 | 0.353 | 2.457 |
| 26.0 | 1.471 | 1.707 | 1.210 | 1.891 | 0.984 | 2.072 | 0.792 | 2.246 | 0.630 | 2.410 | 0.497 | 2.559 | 0.388 | 2.693 |
| 28.0 | 1.604 | 1.861 | 1.320 | 2.062 | 1.073 | 2.259 | 0.864 | 2.448 | 0.687 | 2.626 | 0.542 | 2.789 | 0.423 | 2.934 |
| 30.0 | 1.740 | 2.019 | 1.432 | 2.236 | 1.165 | 2.450 | 0.937 | 2.655 | 0.746 | 2.848 | 0.588 | 3.024 | 0.459 | 3.182 |
| 32.0 | 1.880 | 2.181 | 1.547 | 2.416 | 1.259 | 2.647 | 1.013 | 2.868 | 0.807 | 3.076 | 0.636 | 3.266 | 0.496 | 3.436 |
| 34.0 | 2.024 | 2.348 | 1.666 | 2.601 | 1.356 | 2.849 | 1.091 | 3.087 | 0.869 | 3.310 | 0.685 | 3.514 | 0.535 | 3.697 |
| 36.0 | 2.172 | 2.519 | 1.788 | 2.790 | 1.456 | 3.056 | 1.172 | 3.311 | 0.933 | 3.551 | 0.735 | 3.770 | 0.574 | 3.965 |
| 38.0 | 2.325 | 2.696 | 1.914 | 2.986 | 1.558 | 3.270 | 1.254 | 3.543 | 0.999 | 3.798 | 0.787 | 4.032 | 0.615 | 4.241 |
| 40.0 | 2.482 | 2.878 | 2.044 | 3.187 | 1.664 | 3.491 | 1.340 | 3.781 | 1.067 | 4.054 | 0.841 | 4.303 | 0.657 | 4.526 |
| 45.0 | 2.890 | 3.360 | 2.388 | 3.720 | 1.945 | 4.073 | 1.566 | 4.411 | 1.248 | 4.727 | 0.984 | 5.017 | 0.768 | 5.276 |
| 50.0 | 3.353 | 3.885 | 2.764 | 4.300 | 2.252 | 4.707 | 1.814 | 5.096 | 1.445 | 5.460 | 1.140 | 5.793 | 0.890 | 6.091 |
| 55.0 | 3.853 | 4.463 | 3.177 | 4.938 | 2.589 | 5.402 | 2.086 | 5.847 | 1.663 | 6.264 | 1.312 | 6.644 | 1.025 | 6.984 |
| 60.0 | 4.409 | 5.104 | 3.637 | 5.645 | 2.966 | 6.174 | 2.390 | 6.680 | 1.906 | 7.154 | 1.504 | 7.586 | 1.175 | 7.972 |

ANNUAL PERCENTAGE RISKS OF TUBERCULOUS INFECTION CORRESPONDING TO THE PERCENTAGE ALREADY INFECTED BY THE AGE OF 19.5 YEARS ( 19 YEARS AT LAST BIRTHDAY)

RISQUES ANNUELS (EN %) D'INFECTION TUBERCULEUSE EN FONCTION DU POURCENTAGE DE SUJETS DEJA INFECTES A L'AGE DE 19.5 ANS ( 19 ANS LORS DE LEUR PLUS RECENT ANNIVERSAIRE)

Approximate percentage decrease in risk of infection each year
Pourcentage approximatif de la diminution, chaque année, du risque d'infection

| | 1 | | 3 | | 5 | | 7 | | 9 | | 11 | | 13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage already infected / Pourcentage de sujets déjà infectés | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant | Risk this year / Risque cette année-là | Risk 15 years ago / Risque 15 ans auparavant |
| 2.0 | 0.094 | 0.109 | 0.076 | 0.119 | 0.061 | 0.129 | 0.048 | 0.139 | 0.038 | 0.147 | 0.029 | 0.153 | 0.023 | 0.159 |
| 2.5 | 0.118 | 0.137 | 0.095 | 0.150 | 0.077 | 0.162 | 0.061 | 0.174 | 0.048 | 0.184 | 0.037 | 0.192 | 0.02[illegible] | 0.199 |
| 3.0 | 0.141 | 0.164 | 0.115 | 0.180 | 0.092 | 0.195 | 0.073 | 0.209 | 0.057 | 0.221 | 0.044 | 0.231 | 0.034 | 0.239 |
| 3.5 | 0.165 | 0.192 | 0.134 | 0.211 | 0.108 | 0.228 | 0.085 | 0.244 | 0.067 | 0.258 | 0.052 | 0.270 | 0.040 | 0.280 |
| 4.0 | 0.189 | 0.220 | 0.154 | 0.241 | 0.124 | 0.261 | 0.098 | 0.280 | 0.077 | 0.296 | 0.060 | 0.310 | 0.046 | 0.321 |
| 4.5 | 0.214 | 0.248 | 0.174 | 0.272 | 0.139 | 0.295 | 0.110 | 0.315 | 0.087 | 0.334 | 0.067 | 0.349 | 0.052 | 0.362 |
| 5.0 | 0.238 | 0.276 | 0.193 | 0.303 | 0.155 | 0.328 | 0.123 | 0.351 | 0.096 | 0.372 | 0.075 | 0.389 | 0.057 | 0.403 |
| 5.5 | 0.262 | 0.305 | 0.213 | 0.334 | 0.171 | 0.362 | 0.136 | 0.387 | 0.106 | 0.410 | 0.082 | 0.429 | 0.063 | 0.444 |
| 6.0 | 0.287 | 0.333 | 0.233 | 0.366 | 0.187 | 0.396 | 0.148 | 0.424 | 0.116 | 0.448 | 0.090 | 0.469 | 0.069 | 0.486 |
| 6.5 | 0.312 | 0.362 | 0.253 | 0.397 | 0.203 | 0.430 | 0.161 | 0.460 | 0.126 | 0.487 | 0.098 | 0.509 | 0.075 | 0.527 |
| 7.0 | 0.336 | 0.391 | 0.273 | 0.429 | 0.220 | 0.464 | 0.174 | 0.497 | 0.136 | 0.525 | 0.106 | 0.550 | 0.081 | 0.569 |
| 7.5 | 0.361 | 0.420 | 0.294 | 0.460 | 0.236 | 0.499 | 0.187 | 0.533 | 0.147 | 0.564 | 0.114 | 0.590 | 0.087 | 0.611 |
| 8.0 | 0.387 | 0.449 | 0.314 | 0.492 | 0.252 | 0.533 | 0.200 | 0.570 | 0.157 | 0.603 | 0.122 | 0.631 | 0.093 | 0.654 |
| 9.0 | 0.437 | 0.508 | 0.355 | 0.557 | 0.285 | 0.603 | 0.226 | 0.645 | 0.177 | 0.682 | 0.137 | 0.714 | 0.105 | 0.739 |
| 10.0 | 0.488 | 0.567 | 0.397 | 0.622 | 0.319 | 0.673 | 0.253 | 0.720 | 0.198 | 0.762 | 0.154 | 0.797 | 0.118 | 0.825 |
| 11.0 | 0.540 | 0.627 | 0.439 | 0.687 | 0.352 | 0.744 | 0.279 | 0.796 | 0.219 | 0.842 | 0.170 | 0.881 | 0.130 | 0.912 |
| 12.0 | 0.592 | 0.687 | 0.481 | 0.754 | 0.386 | 0.816 | 0.306 | 0.873 | 0.240 | 0.923 | 0.186 | 0.966 | 0.143 | 1.000 |
| 13.0 | 0.645 | 0.749 | 0.524 | 0.821 | 0.421 | 0.889 | 0.334 | 0.951 | 0.262 | 1.006 | 0.203 | 1.052 | 0.156 | 1.089 |
| 14.0 | 0.698 | 0.811 | 0.568 | 0.889 | 0.456 | 0.962 | 0.361 | 1.029 | 0.283 | 1.089 | 0.220 | 1.139 | 0.169 | 1.179 |
| 15.0 | 0.752 | 0.873 | 0.611 | 0.957 | 0.491 | 1.036 | 0.389 | 1.109 | 0.305 | 1.173 | 0.237 | 1.227 | 0.182 | 1.270 |
| 16.0 | 0.807 | 0.936 | 0.656 | 1.027 | 0.527 | 1.111 | 0.418 | 1.189 | 0.328 | 1.257 | 0.254 | 1.315 | 0.195 | 1.362 |
| 17.0 | 0.862 | 1.000 | 0.701 | 1.097 | 0.563 | 1.187 | 0.446 | 1.270 | 0.350 | 1.343 | 0.271 | 1.405 | 0.208 | 1.455 |
| 18.0 | 0.917 | 1.065 | 0.746 | 1.168 | 0.599 | 1.264 | 0.475 | 1.352 | 0.373 | 1.430 | 0.289 | 1.496 | 0.222 | 1.549 |
| 19.0 | 0.974 | 1.131 | 0.792 | 1.239 | 0.636 | 1.342 | 0.505 | 1.435 | 0.396 | 1.518 | 0.307 | 1.588 | 0.236 | 1.644 |
| 20.0 | 1.031 | 1.197 | 0.839 | 1.312 | 0.673 | 1.420 | 0.534 | 1.519 | 0.419 | 1.606 | 0.325 | 1.680 | 0.249 | 1.740 |
| 22.0 | 1.147 | 1.332 | 0.933 | 1.460 | 0.750 | 1.580 | 0.595 | 1.690 | 0.466 | 1.787 | 0.362 | 1.869 | 0.278 | 1.935 |
| 24.0 | 1.267 | 1.470 | 1.030 | 1.611 | 0.828 | 1.744 | 0.657 | 1.865 | 0.515 | 1.972 | 0.399 | 2.063 | 0.307 | 2.136 |
| 26.0 | 1.389 | 1.612 | 1.130 | 1.766 | 0.908 | 1.912 | 0.720 | 2.045 | 0.565 | 2.162 | 0.438 | 2.261 | 0.336 | 2.341 |
| 28.0 | 1.514 | 1.757 | 1.232 | 1.925 | 0.990 | 2.084 | 0.786 | 2.229 | 0.616 | 2.356 | 0.478 | 2.464 | 0.367 | 2.551 |
| 30.0 | 1.643 | 1.906 | 1.337 | 2.089 | 1.074 | 2.261 | 0.853 | 2.417 | 0.669 | 2.555 | 0.519 | 2.672 | 0.398 | 2.767 |
| 32.0 | 1.775 | 2.060 | 1.445 | 2.257 | 1.161 | 2.442 | 0.922 | 2.611 | 0.723 | 2.760 | 0.561 | 2.886 | 0.431 | 2.988 |
| 34.0 | 1.911 | 2.217 | 1.556 | 2.429 | 1.250 | 2.629 | 0.993 | 2.810 | 0.779 | 2.971 | 0.604 | 3.106 | 0.464 | 3.216 |
| 36.0 | 2.051 | 2.379 | 1.670 | 2.607 | 1.342 | 2.820 | 1.066 | 3.015 | 0.836 | 3.187 | 0.649 | 3.332 | 0.498 | 3.450 |
| 38.0 | 2.194 | 2.547 | 1.788 | 2.789 | 1.437 | 3.018 | 1.141 | 3.226 | 0.895 | 3.410 | 0.695 | 3.565 | 0.534 | 3.690 |
| 40.0 | 2.345 | 2.719 | 1.909 | 2.978 | 1.535 | 3.222 | 1.219 | 3.444 | 0.957 | 3.640 | 0.742 | 3.805 | 0.570 | 3.938 |
| 45.0 | 2.738 | 3.174 | 2.231 | 3.476 | 1.794 | 3.760 | 1.425 | 4.019 | 1.119 | 4.246 | 0.868 | 4.439 | 0.667 | 4.594 |
| 50.0 | 3.168 | 3.671 | 2.582 | 4.019 | 2.077 | 4.346 | 1.650 | 4.644 | 1.296 | 4.906 | 1.006 | 5.128 | 0.773 | 5.306 |
| 55.0 | 3.641 | 4.217 | 2.968 | 4.616 | 2.389 | 4.990 | 1.899 | 5.331 | 1.491 | 5.631 | 1.158 | 5.884 | 0.890 | 6.088 |
| 60.0 | 4.164 | 4.824 | 3.399 | 5.278 | 2.737 | 5.705 | 2.176 | 6.093 | 1.709 | 6.434 | 1.328 | 6.722 | 1.020 | 6.954 |

DECREASES IN INFECTION RISK CORRESPONDING TO VARIOUS PERCENTAGES INFECTED BY THE SAME AGE AT TWO DIFFERENT SURVEYS

DIMINUTION DU RISQUE D'INFECTION CORRESPONDANT A DES POURCENTAGES DIFFERENTS DE SUJETS DEJA INFECTES A UN MEME AGE LORS DE DEUX ENQUETES DIFFERENTES

(Divide the entry in the table by the interval between the surveys in years to obtain the approximate annual percentage decrease for use in Appendix Table B)

(Diviser le chiffre d'entrée dans le présent tableau par l'intervalle en années entre les deux enquêtes pour obtenir le pourcentage annuel approximatif de diminution du risque d'infection à utiliser pour lire le tableau annexe B)

Percentage of persons already infected at the time of the later survey.

Pourcentage de sujets déjà infectés lors de la seconde enquête considerée.

Rows: Percentage of persons already infected at the time of the earlier survey / Pourcentage de sujets déjà infectés lors de la première enquête considerée

| | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 | 5.5 | 6.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.4 | 69 | | | | | | | | | | | | | | |
| 0.6 | 110 | 41 | | | | | | | | | | | | | |
| 0.8 | 139 | 70 | 29 | | | | | | | | | | | | |
| 1.0 | 161 | 92 | 51 | 22 | | | | | | | | | | | |
| 1.5 | 202 | 133 | 92 | 63 | 41 | | | | | | | | | | |
| 2.0 | 231 | 162 | 121 | 92 | 70 | 29 | | | | | | | | | |
| 2.5 | 254 | 184 | 144 | 115 | 92 | 52 | 23 | | | | | | | | |
| 3.0 | 272 | 203 | 162 | 133 | 111 | 70 | 41 | 18 | | | | | | | |
| 3.5 | 288 | 218 | 178 | 149 | 127 | 86 | 57 | 34 | 16 | | | | | | |
| 4.0 | 302 | 232 | 191 | 163 | 140 | 99 | 70 | 48 | 29 | 14 | | | | | |
| 4.5 | 314 | 244 | 203 | 175 | 152 | 111 | 82 | 60 | 41 | 26 | 12 | | | | |
| 5.0 | 324 | 255 | 214 | 185 | 163 | 122 | 93 | 71 | 52 | 36 | 23 | 11 | | | |
| 5.5 | 334 | 265 | 224 | 195 | 173 | 132 | 103 | 80 | 62 | 46 | 33 | 21 | 10 | | |
| 6.0 | 343 | 274 | 233 | 204 | 182 | 141 | 112 | 89 | 71 | 55 | 42 | 30 | 19 | 9 | |
| 6.5 | 351 | 282 | 241 | 212 | 190 | 149 | 120 | 98 | 79 | 63 | 50 | 38 | 27 | 17 | 8 |
| 7.0 | 359 | 290 | 249 | 220 | 198 | 157 | 128 | 105 | 87 | 71 | 58 | 45 | 35 | 25 | 16 |
| 7.5 | 366 | 297 | 256 | 227 | 205 | 164 | 135 | 112 | 94 | 78 | 65 | 53 | 42 | 32 | 23 |
| 8.0 | 373 | 304 | 263 | 234 | 212 | 171 | 142 | 119 | 101 | 85 | 71 | 59 | 49 | 39 | 30 |
| 9.0 | 385 | 316 | 275 | 246 | 224 | 183 | 154 | 132 | 113 | 97 | 84 | 72 | 61 | 51 | 42 |
| 10.0 | 396 | 327 | 286 | 257 | 235 | 194 | 165 | 143 | 124 | 108 | 95 | 83 | 72 | 62 | 53 |
| 11.0 | 406 | 337 | 296 | 267 | 245 | 204 | 175 | 153 | 134 | 119 | 105 | 93 | 82 | 72 | 63 |
| 12.0 | 416 | 346 | 306 | 277 | 254 | 214 | 184 | 162 | 143 | 128 | 114 | 102 | 91 | 82 | 73 |
| 13.0 | 424 | 355 | 314 | 285 | 263 | 222 | 193 | 170 | 152 | 136 | 123 | 111 | 100 | 90 | 81 |
| 14.0 | 432 | 363 | 322 | 293 | 271 | 230 | 201 | 178 | 160 | 144 | 131 | 119 | 108 | 98 | 89 |
| 15.0 | 440 | 370 | 330 | 301 | 278 | 238 | 208 | 186 | 167 | 152 | 138 | 126 | 115 | 106 | 97 |
| 16.0 | 447 | 377 | 337 | 308 | 285 | 245 | 216 | 193 | 174 | 159 | 145 | 133 | 122 | 113 | 104 |
| 17.0 | 453 | 384 | 343 | 314 | 292 | 251 | 222 | 200 | 181 | 165 | 152 | 140 | 129 | 119 | 110 |
| 18.0 | 460 | 390 | 350 | 321 | 298 | 257 | 228 | 206 | 187 | 172 | 158 | 146 | 135 | 126 | 117 |
| 19.0 | 466 | 396 | 356 | 327 | 304 | 263 | 234 | 212 | 193 | 178 | 164 | 152 | 141 | 132 | 123 |
| 20.0 | 471 | 402 | 361 | 332 | 310 | 269 | 240 | 218 | 199 | 183 | 170 | 158 | 147 | 137 | 128 |
| 22.0 | 482 | 413 | 372 | 343 | 321 | 280 | 251 | 228 | 210 | 194 | 181 | 169 | 158 | 148 | 139 |
| 24.0 | 492 | 423 | 382 | 353 | 331 | 290 | 261 | 238 | 220 | 204 | 191 | 179 | 168 | 158 | 149 |
| 26.0 | 501 | 432 | 391 | 362 | 340 | 299 | 270 | 248 | 229 | 213 | 200 | 188 | 177 | 167 | 158 |
| 28.0 | 510 | 441 | 400 | 371 | 349 | 308 | 279 | 256 | 238 | 222 | 209 | 196 | 186 | 176 | 167 |
| 30.0 | 518 | 449 | 408 | 379 | 357 | 316 | 287 | 265 | 246 | 230 | 217 | 205 | 194 | 184 | 175 |
| 32.0 | 526 | 457 | 416 | 387 | 365 | 324 | 295 | 272 | 254 | 238 | 225 | 213 | 202 | 192 | 183 |
| 34.0 | 534 | 464 | 423 | 395 | 372 | 331 | 302 | 280 | 261 | 246 | 232 | 220 | 209 | 199 | 190 |
| 36.0 | 541 | 471 | 431 | 402 | 379 | 339 | 310 | 287 | 268 | 253 | 239 | 227 | 216 | 207 | 198 |
| 38.0 | 548 | 478 | 437 | 409 | 386 | 345 | 316 | 294 | 275 | 260 | 246 | 234 | 223 | 213 | 204 |
| 40.0 | 554 | 485 | 444 | 415 | 393 | 352 | 323 | 300 | 282 | 266 | 253 | 241 | 230 | 220 | 211 |
| 45.0 | 570 | 501 | 460 | 431 | 409 | 368 | 339 | 316 | 298 | 282 | 268 | 256 | 246 | 236 | 227 |
| 50.0 | 585 | 515 | 475 | 446 | 423 | 383 | 354 | 331 | 312 | 297 | 283 | 271 | 260 | 251 | 242 |
| 55.0 | 599 | 529 | 489 | 460 | 438 | 397 | 368 | 345 | 327 | 311 | 297 | 285 | 275 | 265 | 256 |
| 60.0 | 613 | 543 | 503 | 474 | 451 | 410 | 381 | 359 | 340 | 325 | 311 | 299 | 288 | 278 | 270 |

DECREASES IN INFECTION RISK CORRESPONDING TO VARIOUS PERCENTAGES INFECTED BY THE SAME AGE AT TWO DIFFERENT SURVEYS

DIMINUTION DU RISQUE D'INFECTION CORRESPONDANT A DES POURCENTAGES DIFFERENTS DE SUJETS DEJA INFECTES A UN MEME AGE LORS DE DEUX ENQUETES DIFFERENTES

(Divide the entry in the table by the interval between the surveys in years to obtain the approximate annual percentage decrease for use in Appendix Table B)

(Diviser le chiffre d'entrée dans le présent tableau par l'intervalle en années entre les deux enquêtes pour obtenir le pourcentage annuel approximatif de diminution du risque d'infection à utiliser pour lire le tableau annexe B)

Percentage of persons already infected at the time of the later survey.
Pourcentage de sujets déjà infectés lors de la seconde enquête considerée.

...centage of persons already infected at the time of the earlier survey
...rcentage de sujets déjà infectés lors de la première enquête considerée

| | 6.5 | 7.0 | 7.5 | 8.0 | 9.0 | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.0 | 8 | | | | | | | | | | | | | | |
| 7.5 | 15 | 7 | | | | | | | | | | | | | |
| 8.0 | 22 | 14 | 7 | | | | | | | | | | | | |
| 9.0 | 34 | 26 | 19 | 12 | | | | | | | | | | | |
| 10.0 | 45 | 37 | 30 | 23 | 11 | | | | | | | | | | |
| 11.0 | 55 | 47 | 40 | 33 | 21 | 10 | | | | | | | | | |
| 12.0 | 64 | 57 | 49 | 43 | 30 | 19 | 9 | | | | | | | | |
| 13.0 | 73 | 65 | 58 | 51 | 39 | 28 | 18 | 9 | | | | | | | |
| 14.0 | 81 | 73 | 66 | 59 | 47 | 36 | 26 | 17 | 8 | | | | | | |
| 15.0 | 88 | 81 | 73 | 67 | 54 | 43 | 33 | 24 | 15 | 7 | | | | | |
| 16.0 | 95 | 88 | 80 | 74 | 61 | 50 | 40 | 31 | 22 | 14 | 7 | | | | |
| 17.0 | 102 | 94 | 87 | 80 | 68 | 57 | 47 | 38 | 29 | 21 | 14 | 7 | | | |
| 18.0 | 108 | 101 | 93 | 87 | 74 | 63 | 53 | 44 | 35 | 27 | 20 | 13 | 6 | | |
| 19.0 | 114 | 107 | 99 | 93 | 80 | 69 | 59 | 50 | 41 | 33 | 26 | 19 | 12 | 6 | |
| 20.0 | 120 | 112 | 105 | 98 | 86 | 75 | 65 | 56 | 47 | 39 | 32 | 25 | 18 | 12 | 6 |
| 22.0 | 131 | 123 | 116 | 109 | 97 | 86 | 76 | 66 | 58 | 50 | 42 | 35 | 29 | 22 | 16 |
| 24.0 | 141 | 133 | 126 | 119 | 107 | 96 | 86 | 76 | 68 | 60 | 52 | 45 | 39 | 32 | 26 |
| 26.0 | 150 | 142 | 135 | 128 | 116 | 105 | 95 | 86 | 77 | 69 | 62 | 55 | 48 | 42 | 36 |
| 28.0 | 159 | 151 | 144 | 137 | 125 | 114 | 104 | 94 | 86 | 78 | 70 | 63 | 57 | 50 | 44 |
| 30.0 | 167 | 159 | 152 | 145 | 133 | 122 | 112 | 103 | 94 | 86 | 79 | 72 | 65 | 59 | 53 |
| 32.0 | 175 | 167 | 160 | 153 | 141 | 130 | 120 | 110 | 102 | 94 | 86 | 79 | 73 | 66 | 60 |
| 34.0 | 182 | 174 | 167 | 161 | 148 | 137 | 127 | 118 | 109 | 101 | 94 | 87 | 80 | 74 | 68 |
| 36.0 | 189 | 182 | 174 | 168 | 155 | 144 | 134 | 125 | 116 | 108 | 101 | 94 | 87 | 81 | 75 |
| 38.0 | 196 | 189 | 181 | 175 | 162 | 151 | 141 | 132 | 123 | 115 | 108 | 101 | 94 | 88 | 82 |
| 40.0 | 203 | 195 | 188 | 181 | 169 | 158 | 148 | 139 | 130 | 122 | 115 | 107 | 101 | 95 | 89 |
| 45.0 | 219 | 211 | 204 | 197 | 185 | 174 | 164 | 154 | 146 | 138 | 130 | 123 | 117 | 110 | 104 |
| 50.0 | 233 | 226 | 219 | 212 | 199 | 188 | 178 | 169 | 160 | 153 | 145 | 138 | 131 | 125 | 119 |
| 55.0 | 247 | 240 | 233 | 226 | 214 | 203 | 192 | 183 | 175 | 167 | 159 | 152 | 146 | 139 | 133 |
| 60.0 | 261 | 254 | 246 | 240 | 227 | 216 | 206 | 197 | 188 | 180 | 173 | 166 | 159 | 153 | 147 |

| | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 45 | 50 | 55 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 22.0 | 11 | | | | | | | | | | | | | |
| 24.0 | 21 | 10 | | | | | | | | | | | | |
| 26.0 | 30 | 19 | 9 | | | | | | | | | | | |
| 28.0 | 39 | 28 | 18 | 9 | | | | | | | | | | |
| 30.0 | 47 | 36 | 26 | 17 | 8 | | | | | | | | | |
| 32.0 | 55 | 44 | 34 | 25 | 16 | 8 | | | | | | | | |
| 34.0 | 62 | 51 | 41 | 32 | 23 | 15 | 7 | | | | | | | |
| 36.0 | 69 | 59 | 49 | 39 | 31 | 22 | 15 | 7 | | | | | | |
| 38.0 | 76 | 65 | 55 | 46 | 38 | 29 | 21 | 14 | 7 | | | | | |
| 40.0 | 83 | 72 | 62 | 53 | 44 | 36 | 28 | 21 | 14 | 7 | | | | |
| 45.0 | 99 | 88 | 78 | 69 | 60 | 52 | 44 | 36 | 29 | 22 | 16 | | | |
| 50.0 | 113 | 103 | 93 | 83 | 75 | 66 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | | |

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| **ARGENTINA:** Liga Argentina contra la Tuberculosis, Santa Fé 4292, **Buenos Aires.** | Prof. F. Martinez, Dr. H. M. Rodriguez Castells, Prof. Carlos A. Urquijo, Prof. R. A. Vaccarezza. |
| **AUSTRALIA:** National Tuberculosis Association of Australia, 24, Irwin Street, **Yarralumla A.C.T. 2600.** | Dr. W. Cotter B. Harvey, Dr. G. Howells, Dr. J. Isbister. |
| **AUSTRIA:** Bundesministerium für Soziale Verwaltung, Stubenring 1, **Vienna 1.** | Prim. Dr. Erwin Dissmann, Dozent Dr. Karl Schindl. |
| **BELGIUM:** Oeuvre Nationale Belge de Défense contre la Tuberculose, 56, rue de la Concorde, **Brussels.** | Dr. F. Caspers, Prof. M. Millet. |
| **BRAZIL:** Federaçao Brasileira das Sociedades de Tuberculose, Rua do Resende 128, 2° Andar, **Rio de Janeiro G.B.** | Prof. Newton Bethlem, Dr. Aldo Villas Bôas, Dr. José Fernando Carneiro, Dr. Gilmario Murao Teixeira, Dr. Mozart Tavares de Lima Filho. |
| **BULGARIA:** Association Médicale Scientifique des Phtisiâtres de la République Populaire de Bulgarie c/o Clinique Phtisiâtrique de l'Institut Supérieur de Médecine, **Sofia.** | |
| **BURMA:** Union of Burma TB Relief Association, Opposite General Hospital TB Clinic, Bogyoke Aung San Street, **Rangoon.** | Dr. Than Aung. |
| **CANADA:** Canadian Tuberculosis Association, 343 O'Connor Street, **Ottawa 4.** | Mr. C. Dobell, Dr. S. Grzybowski, Dr. C. W. L. Jeanes, Dr. L. W. C. Sturgeon. |
| **CEYLON:** Ceylon National Association for the Prevention of Tuberculosis, 51, Edinburgh Crescent, **Colombo 7.** | Dr. J. H. F. Jayasuriya. |
| **CHILI:** Sub-Departamento de Tuberculosis, Servicio Nacional de Salud, Direccion General, E. Mac-Iver 541, Casilla 3979, **Santiago** | Prof. G. Corbalan Trumbull, Dr. A. Pierry. |
| **COLOMBIA:** Liga Antituberculosa Colombiana, Avenida Jimenez No 1-85, Apartado Aereo 41-04, **Bogota.** | Dr. Manuel de Luca. |
| **CONGO:** Ligue Nationale Antituberculeuse, Avenue de Kabinda A.S.B.L., B.P. 1316, **Kinshasa.** | |
| **CUBA:** Lucha Antituberculosa, Avenida 31 y 76, **Marianao.** | Dr. Jorge Aldereguia, Dr. Pedro Domingo, Dr. Luis Pascual. |
| **CZECHOSLOVAKIA:** Société de Pneumologie et de Phtisiologie, Clinique Universitaire de Pneumophtisiologie, Jihlavska 100, **Brno 25.** | Dr. O. Halak, Prof. E. Jancik, Doc. Rudolf Krivinka. |
| **DAHOMEY:** Ligue Dahoméenne de Défense contre la Tuberculose, Direction de la Santé Publique, **Cotonou.** | |
| **DENMARK:** Nationalforeningen til Tuberkulosens Bekämpelse, Store Strandsträde, 21, **Copenhagen K.** | Dr. O. Christensen, Mr. K. Saxild. |
| **ECUADOR:** Liga Ecuatoriana Anti-Tuberculosa, Casilla 3438, Oficina Luque 127, **Guayaquil.** | Dr. Miguel Angel Jijón. |
| **FINLAND:** Suomen Tuberkuloosin Vastustamisyhdistys, Kalevankatu 9, **Helsinki 10.** | Prof. Erkki Larmola, Prof. Jorma Pätiälä. |
| **FRANCE:** Comité National de Défense contre la Tuberculose, 66, boulevard Saint-Michel, **75 Paris 6e.** | Prof. M. Bariéty, Prof. Etienne Bernard, Prof. Georges Brouet, Prof. Ch. Gernez-Rieux, Prof. André Meyer. |
| **Democratic Republic of GERMANY:** Gesellschaft für Lungenkrankheiten und Tuberkulose, Forschungsinstitut für Tuberkulose und Lungenkrankheiten, Karowerstrasse 11, **Berlin-Buch.** | |
| **Federal Republic of GERMANY:** Deutsches Zentralkomitee zur Bekämpfung der Tuberkulose, Schiessgrabenstrasse 24/11, **89 Augsburg.** | Dr. K. Breu, Dr. Gäde, Prof. R. Müller, |
| **GHANA:** Ghana Society for the Prevention of Tuberculosis, P.O. Box 2902, **Accra.** | |
| **GREAT BRITAIN:** The Chest and Heart Association, Tavistock House North, Tavistock Square, **London W.C. 1.** | Dr. D. L. H. Goddard, Rt. Hon. Lord Kirkwood, Dr. N. Oswald, Dr. N. L. Rusby, Dr. J. H. Harley Williams. |
| **GREECE:** Association Nationale contre la Tuberculose, Rue Arahovis 11, **Athens.** | Dr. P. Kapalas, Dr. B. Papanicolaou, Prof. C. Stefanopoulos. |
| **GUATEMALA:** Liga Nacional contra la Tuberculosis, 9A Calle «A» 0-65, Zona 1, **Guatemala C.A.** | Lic. Eduardo Mayora D. |
| **HAITI:** Ligue Nationale Antituberculeuse, **Port-au-Prince.** | |
| **HONDURAS:** Liga Hondurena contra la Tuberculosis, 3era Calle No 913, **Tegucigalpa D.C.** | Dr. Tiburcio Guerrero. |
| **HUNGARY:** Hungarian Medical Association for Tuberculosis and Pulmonary Diseases, Diosarok u.l. «Janos» Hospital, Department of Pulmonology V., **Budapest XII.** | |
| **ICELAND:** Medical Superintendent, Vifilsstadir Hospital, **Reykjavik.** | Dr. Helgi Ingvarsson, Dr. Sigurdur Sigurdsson. |
| **INDIA:** The Tuberculosis Association of India, 3, Red Cross Road, **New Delhi 2.** | Dr. N. L. Bordia, Sri B. M. Cariappa, Dr P. K. Duraiswami, Major General C. K. Lakshmanan, Dr. P. K. Sen. |
| **INDONESIA:** The Indonesian Tuberculosis Association, Djalan Tarakan 7, **Djakarta** | |
| **IRAN:** Société de Lutte contre la Tuberculose et de Protection des Phtisiques, Avenue Pahlavi 40 rue Bidi, **Teheran.** | H. E. Hossein Ala. |
| **IRAQ:** Anti-Tuberculosis Society in Iraq, General Headquarters, **Baghdad-South Gate.** | Mr. Salman Bayat, Dr. Sabich Al Wahbi. |
| **ISRAEL:** Anti-Tuberculosis League of Israel, Ruppinstreet 14A, P.O. Box 3024, **Tel-Aviv.** | Dr. M. Krieger, Dr. Y. Adler, Dr. J. Zilberstein. |
| **ITALY:** Federazione Italiana contro la Tubercolosi, Via Ezio 24, **Rome.** | Prof. G. Daddi, Prof. V. Lazzeroni, Prof. G. L'Eltore, Prof. V. Monaldi, Prof. A. Omodei Zorini. |
| **IVORY COAST:** Comité Antituberculeux de la République de Côte-d'Ivoire, B.P. 1754, **Abidjan.** | Prof. P. Delormas, Dr. Vilasco. |
| **JAPAN:** The Japan Antituberculosis Association, Kekkaku Yobo Kai, Kanda Misakicho, Chiyoda-ku **Tokyo.** | Prof. Imasato Dohomae, Prof. Toshiaki Ebina, Dr. Tatsuro Iwasaki, Dr. Yuro Kawamori, Dr. Masayoshi Yamaguchi. |
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| **KOREA (South):** Korean National Tuberculosis Association, 59-11, 3-Ka, Chungmu-ro, Chung-ku, **Seoul.** | Dr. Choong Chung, Dr. Ho-Sung Song, Dr Sook-Pyo Kwon. |
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| **LUXEMBURG:** Ligue Luxembourgeoise contre la Tuberculose, Case Postale N° 86, **Luxemburg-City.** | Dr. Th. Backes, Dr. René Koltz, |
| **MADAGASCAR:** Comité Malagasy contre la Tuberculose c/o Institut d'Hygiène Sociale, Avenue de la Réunion, **Tananarive.** | Dr. J. Ravoahangy Adrianavalona, Dr. Marthe Schaffner Razafindrahaba. |
| **MALAYSIA:** Malayan Association for the Prevention of Tuberculosis, P.O. Box 484, **Kuala Lumpur.** | Dr. J. S. Sodhy. |
| **MALI:** Comité Antituberculeux du Mali, Direction de la Santé, **Bamako.** | Dr. Abdoul Karim Sangare. |
| **MEXICO:** Comité Nacional de Lucha contra la Tuberculosis, Londres 40-2. Piso, Apartado Postal No 5-473, **Mexico 6 D.F.** | Dr. Donato G. Alarcón, Dr. Miguel Jiménez, Dr. Jorge Yarza Carreón, Dr. José Luis Urriza Gama, Dr. Antonio Izaguirre Mercado. |
| **MONACO:** Service d'Hygiène et de Salubrité Publique, **Monaco.** | Dr. E. Boeri, Dr. J. Simon. |
| **MOROCCO:** Ligue Marocaine contre la Tuberculose, Ministère de la Santé, Avenue Mohamed V, **Rabat** | Dr. M. El Fassi El Fahri, Dr. M. Lahlou. |
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| **NEW ZEALAND:** The New Zealand Federation of Tuberculosis Associations (Inc.), P.O. Box 321, **Wellington C. 1.** | Mr. L. V. Farthing. |
| **NIGER:** Comité Antituberculeux de la République du Niger, B.P. 80, **Niamey.** | Mr. A. Hassane, Mr. S. Hassane, Dr. J. Wright. |
| **NORWAY:** Nasjonalforeningen for Folkehelsen, Postboks 7139, Homansbyen, **Oslo 3.** | Dr. T. Gedde-Dahl, Dr. Per Hanssen. |
| **PAKISTAN:** Pakistan National Tuberculosis Association, 14 Jinnah Avenue, **Dacca 2.** | Mr. Vajid Mahmood. |
| **PANAMA:** Organizacion Panamena Antituberculosa, Apartado 650, **Panama R.P.** | Dr. Alberto E. Calvo, Dr. Juan B. Flors. |
| **PERU:** Division de Tuberculosis, Ministerio de Salud Publica y Asistencia Social, Avenida Wilson 1140-3, **Lima.** | Dr. L. Cano Gironda, Prof. O. Garcia Rosell. |
| **PHILIPPINES:** The Philippine Tuberculosis Society Inc., 1853 Rizal Avenue, P.O. Box 281, **Manilla.** | Dr. Miguel Canizares, Mr. J. Y. Buktaw. |
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| **SIKKIM:** Antituberculosis Association, **Gangtok.** | |
| **SINGAPORE:** The Singapore Antituberculosis Association, 60 Shenton Way, **Singapore 2.** | Dr. N. C. Sen-Gupta. |
| **SOUTH AFRICA:** South African National Tuberculosis Association, 621 Leisk House, Cor. Bree and Rissik Streets, P.O. Box 10.501, **Johannesburg.** | Dr. M. J. Broderick, Dr. B. A. Dormer. |
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| **SUDAN:** N.A.P.T., Ministry of Health, P.O.B. No 2101, **Khartoum.** | |
| **SWEDEN:** Swedish National Association against Heart and Chest Diseases, V. Trädgardsgatan 11B, **Stockholm C.** | Dr. John Lundquist, Prof. Arvid Wallgren. |
| **SWITZERLAND:** Association Suisse contre la Tuberculose, Waisenhausplatz 25, Postfach 1193, **3002 Bern.** | Dr. E. Arnold, Dr. M. Tromp. |
| **SYRIA:** Comité Syrien de Défense contre la Tuberculose, B.P. 744 **Damas.** | Prof. A. Chahine, Dr. R. Khayat |
| **TAIWAN:** National Tuberculosis Association of Taiwan, China, 68-1 Fu Shun Street **Taipei.** | Dr. C. T. Hsing. |
| **TANZANIA:** Tanzania Association against Tuberculosis, P.O. Box 2449, **Dar-es-Salaam.** | |
| **THAILAND:** The Anti-Tuberculosis Association of Thailand, 1281, Pahol Yothin Highway, **Bangkok.** | Air Vice-Marshal Chua Punsoni, Dr. Soumbun Phong Aksara, Dr. Nadda Sriyabhaya, Dr. Ninart Chinachoti. |
| **TUNISIA:** Ligue Nationale Antituberculeuse de la République de Tunisie, Institut de Phtisiologie, **Ariana.** | Dr. Brahim El Gharbi, Dr. A. Ridha Farah |
| **TURKEY:** Association Nationale Turque contre la Tuberculose, Selime Hatun, **Taksim-Istanbul.** | Prof. Dr. Selâhattin Akkaynak, Dr. Tevfik Ismail Gökçe, Prof. Dr. Nusret Karasu, Dr. Nesati Uster. |
| **U.A.R.:** Association Générale contre la Tuberculose, 19, rue Amin Sami-Monira, **Cairo.** | Dr. Abdel Aziz Sami, Dr. Noureldin Tarrâf. |
| **UPPER VOLTA:** Comité Antituberculeux de la Haute-Volta, B.P. 60, **Ouagadougou.** | Dr. A. Barraud, Dr. M. Corap. |
| **URUGUAY:** Servicio de A. y P. Antituberculosa, Durazno 1242, **Montevideo.** | Dr. Carlos M. Murguia, Prof. A. Saenz. |
| **U.S.A.:** National Tuberculosis and Respiratory Disease Association, 1740 Broadway, **New York. N.Y. 10019.** | Dr. S. Jacobs, Dr. D. E. Jenkins, Dr. R. A. Miller, Dr. J. E. Perkins, Dr. R. A. Yeager. |
| **U.S.S.R.:** Société des Phtisiâtres Soviétiques, 4, rue Dostoievsky, **Moscow A-30.** | Prof. D. D. Asseiev, Prof. Ph. V. Chebanov, Prof. N. A. Schmelev, Dr. A. I. Lapina, Prof. A. Raboukhine. |
| **VENEZUELA:** Federacion de Asociaciones Antituberculosas Venezuela, Calle 94 No 2 A-76, Apt. 74, **Maracaibo.** | Dr. José I. Baldo, Dr. Pedro Iturbe. |
| **VIETNAM (North):** Institut de la Tuberculose de la République Démocratique du Viet Nam, 15, rue Trân-Hung-Dao, **Hanoi.** | Dr. Pham-Khac-Quang. |
| **VIETNAM (South):** Ligue Antituberculeuse du Vietnam, Rue Le-Van-Duyêt, **Gia Dinh.** | Dr. Tran-Van-Do, Dr. Phan-Huy-Quat. |
| **YUGOSLAVIA:** Section Centrale de la Tuberculose, Croix-Rouge Yougoslave, Simina 19, **Belgrade.** | Prof. Milic Grujic, Prof. R. Neubauer. |